CCD-TR370E/TR380E/TR380EU

RMT-708

SERVICE MANUAL

AEP Model
UK Model
CCD-TR370E/TR380E
E Model

Russian Model
Australian Model
Tourist Model
CCD-TR380E

Handycam

A MECHANISM

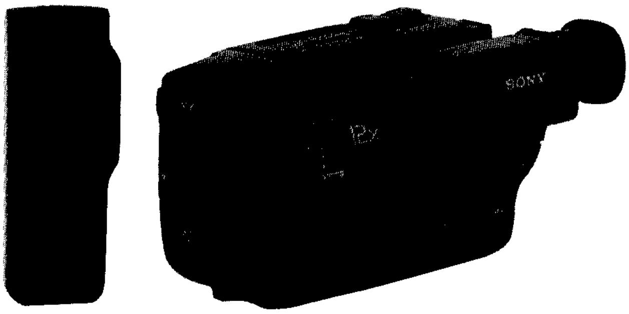


Photo : CCD-TR380E

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

- The Wireless remote commander (RMT-708) is not attached to CCD-TR370E.
  But there is no difference in the remote sensor (IC002, MA-231 board) compared with CCD-TR380E.
- CCD-TR380EU is model that screwdriver and RFU adaptor (RFU-99E) are added in CCD-TR380E.
  CCD-TR380EU are different from CCD-TR380E only in the accessories and packing materials.

SPECIFICATIONS

Video Camera Recorder

System
Video recording system
Two rotary heads, Helical scanning, FM system
Audio recording system
Rotary heads, FM system
Video signal
PAL colour, CCIR standards
Usable cassette
8 mm video format cassette (standard 8 mm)
Tape speed
SP mode: Approx. 20.051 mm (13/16 in)/second
LP mode: Approx. 10.058 mm (13/32 in)/second (playback only)
Recording time
SP mode: 1 hour and 30 minutes (P5-90)
Playback time
SP mode: 1 hour and 30 minutes (P5-90)
LP mode: 3 hours (P5-90)
Fastforward/rewind time
Approx. 6 min. 30 sec. (P5-90)
Image devide
CCD (Charge Coupled Device)
Viewfinder
Electronic viewfinder (black and white)
Lens
12 x, Combined power zoom lens, Filter diameter 37 mm (1 1/2 inches), TTL autofocus system inner focus wide macro system
Focal distance
5.4 – 64.8 mm (7/32 – 2 5/8 inches)
39 – 468 mm (1 9/16 – 18 1/2 inches) when converted to a 35 mm still camera
Colour temperature
Auto
Minimum illumination
0.8 lx at F 1.8
Illumination range
0.8 to 100,000 lx
Recommended illumination
More than 100 lx

Input and Output connectors
Video output
Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output
Monaural, Phono jack, 327 mV, (at load impedance 47 kΩ), impedance less than 2.2 kΩ
RFU DC OUT
Special minijack, DC 5 V
Headphones jack
Mini-jack (ø 3.5 mm)
LANC jack
Stereo-mini-mini-jack (ø 2.5 mm)
MIC jack
Mini-jack, 0.338 mV, low impedance with 2.5 to 3 V DC output, impedance 6.8 kΩ (ø 3.5 mm)

General
Power requirements
On battery mounting surface 6.0 V (battery pack), 7.5 V (AC power adaptor)
Average power consumption
4.9 W
Installation
Vertically, Horizontally
Operating temperature
0°C to 40°C (32°F to 104°F)
Storage temperature
–20°C to +60°C (–4°F to +140°F)
Dimensions
114 x 110 x 207 mm (4 1/2 x 4 3/8 x 8 1/4 inches) (w/h/d)
Mass
850 g (1 lb 14 oz)
Excluding the battery pack, lithium battery, cassette and shoulder strap
1,070 g (2 lb 6 oz)
Including the battery pack NP-55, lithium battery CR2025, cassette P5-90 and shoulder strap
Microphone
Electret condenser microphone, monaural type

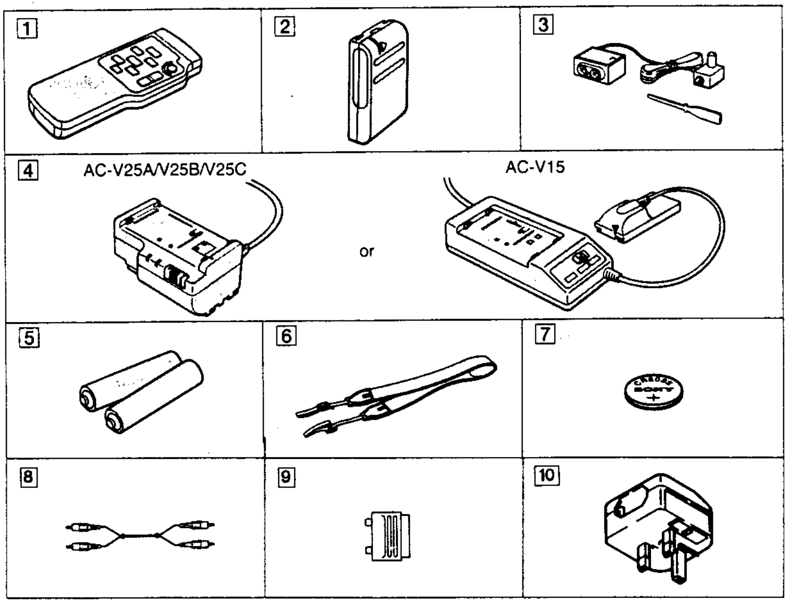
— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Supplied accessories



1 Wireless remote commander (1) (TR380E/TR380EU)

2 **NP-55 Battery pack (1)**

3 RFU-99E RFU adaptor with a screwdriver (1) (TR380EU)

4 **AC-V25A/V25B/V25C/V15 AC power adaptor (1)**

5 **R6 (size AA) Battery for Remote Commander (2)**

6 **Shoulder strap (1) (p. 61)**

7 **CR2025 Lithium battery (1)**
Already installed in the camcorder.

8 A/V connecting cable (1) (TR370E/TR380E)

9 21-pin adaptor (1) (TR370E/TR380E: AEP, UK, Russian Model)

10 AC conversion adaptor (1) (Hong Kong Model)

AC power adaptor

Power requirements
110 – 240 V AC, 50/60 Hz
Power consumption
AC-V25A/V25B/V25C:17 W
AC-V15: 18 W
Output voltage
DC OUT in operation mode:
AC-V25A/V25B/V25C: 7.5 V, 1.5 A
AC-V15: 7.5 V, 1.6 A
Battery charge terminal:
10 V, 1.1 A in charge mode
Application
Sony battery packs NP-55, NP-55H, NP-65, NP-66H, NP-77H, NP-77HD, NP-90/90D
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to +60 °C
(-4 °F to +140 °F)
Dimensions
AC-V25A/V25B/V25C:
Approx. 103 x 49 x 63 mm (w/h/d) (4 ⅛ x 1 15/16 x 2 ½ inches)
AC-V15:
Approx. 165 x 43.5 x 75 mm (w/h/d) (6 ½ x 1 ¾ x 3 inches)
Including projecting parts and controls
Mass
AC-V25A: 320 g (11 oz)
AC-V25B/V25C: 300 g (10 oz)
AC-V15: 420 g (15 oz)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

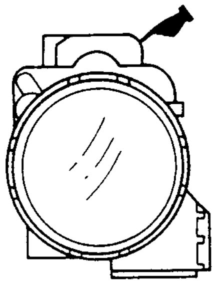
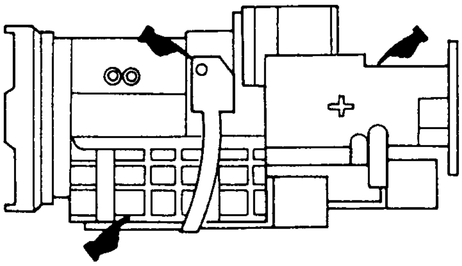
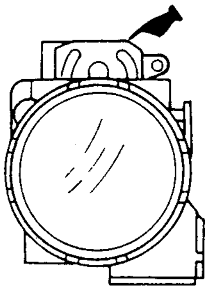
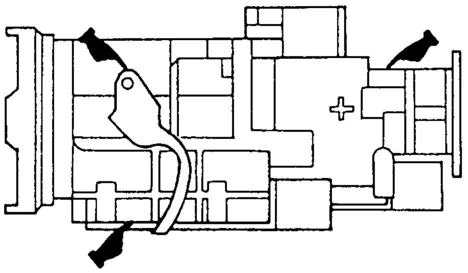
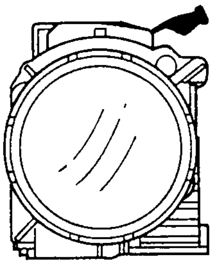
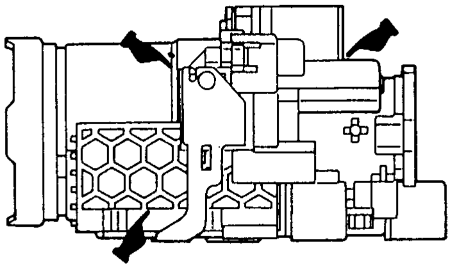
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

[Zoom lens]

This unit employs three types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens ☛ : difference point

TYPE Ⅰ (LSV-140A)	TYPE Ⅱ (VCL-5412WA)
From the front of the lens  From the right side of the lens (as seen from the front) 	From the front of the lens  From the right side of the lens (as seen from the front) 
TYPE Ⅲ (VCL-5412WB)	
From the front of the lens  From the right side of the lens (as seen from the front) 	

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

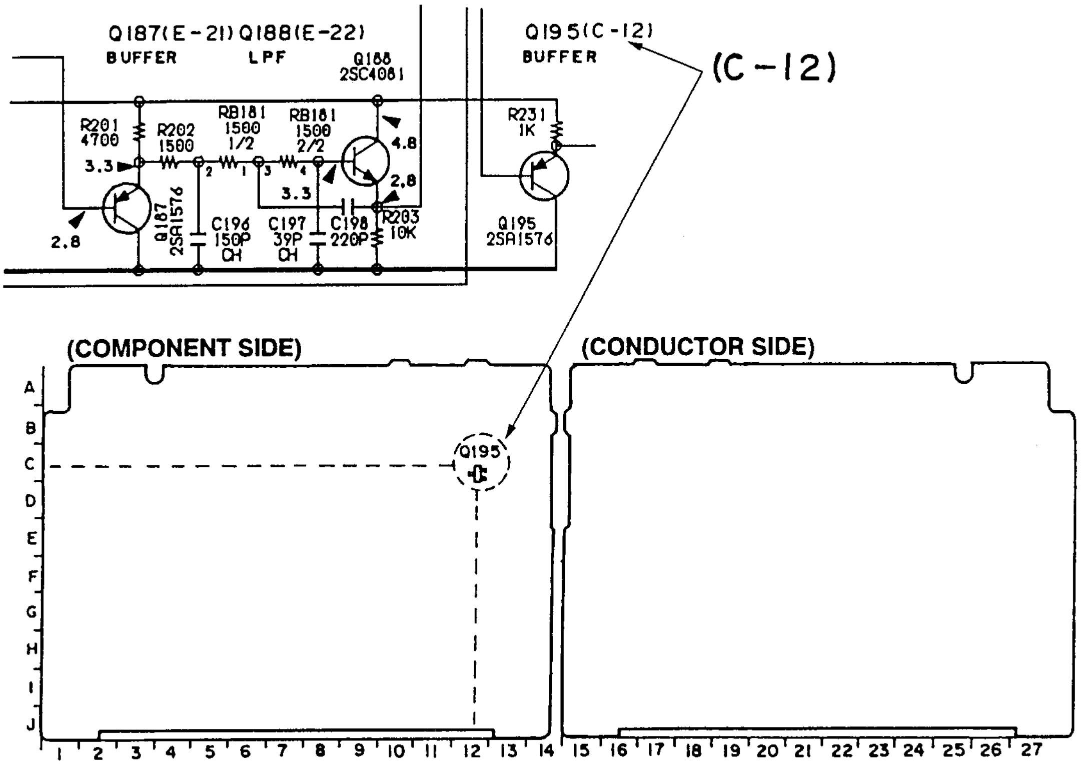
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 4–24, 4–35, 4–36, 4–55 and 4–57)
This diagram is useful for repair.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
4.8
3.3
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
(C-12)
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

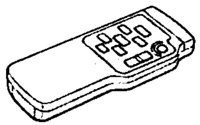
This section is extracted from instruction manual of CCD-TR380E (AEP/UK).

Checking Supplied Accessories

Comprobación de los accesorios suministrados

Check that the following accessories are supplied with your camcorder.

Compruebe si los siguientes accesorios están incluidos con su videocámara.

1


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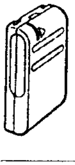

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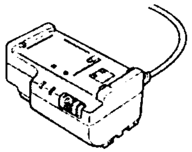
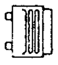
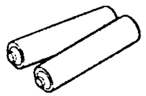
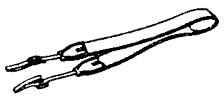


4

5


6


7


8

1 **Wireless Remote Commander (1)**

2 **NP-55 Battery Pack (1)**

3 **AC-V25A/V25B/V25C AC power adaptor (1)**

4 **A/V connecting cable (1)**

5 **21-pin adaptor (1)**

6 **R6 (size AA) battery for Remote Commander (2)**

7 **Shoulder strap (1)**

8 **CR2025 Lithium Battery (1)**
Already installed in the camcorder.

1 **Telemando inalámbrico (1)**

2 **Bateria NP-55 (1)**

3 **Adaptador de alimentación de CA AC-V25A/V25B/V25C (1)**

4 **Cable conector de audio/video (1)**

5 **Adaptador de 21 terminales (1)**

6 **Pilas R6 (tamaño AA) para el telemando (2)**

7 **Bandolera (1)**

8 **Pila de litio CR2025 (1)**
Ya está colocada en la videocámara

Getting Started

Charging and Installing the Battery Pack

Preparativos

Carga y fijación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25A/V25B/V25C AC power adaptor.

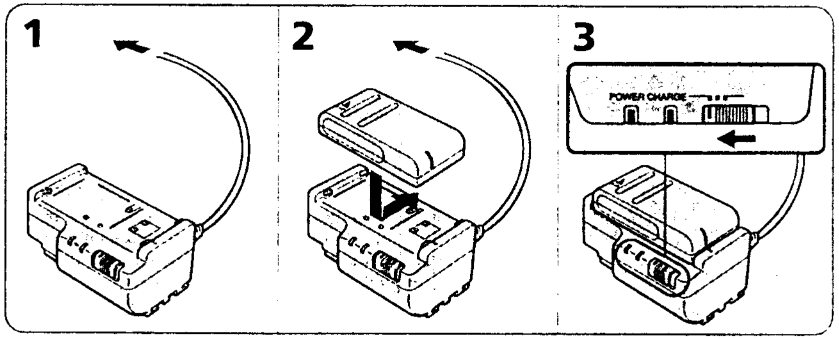
Antes de utilizar la videocámara, primero tendrá que cargar y colocar la batería. Para cargar la batería, utilice el adaptador de alimentación de CA AC-V25A/V25B/V25C suministrado.

Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the AC power adaptor to the mains. **(2)** Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to the centre position and unplug the unit from the mains. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to the centre position.

Carga de la batería

Cargue la batería en un lugar nivelado y exento de vibraciones.
(1) Conecte el adaptador de alimentación de CA a una toma de la red. **(2)** Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA, y después deslice la batería en el sentido de la flecha. **(3)** Ponga el selector en CHARGE. La lámpara CHARGE (anaranjada) se encenderá y se iniciará la carga.
Cuando finalice la carga, la lámpara CHARGE se apagará. Ponga el selector en la posición central y desconecte la unidad de la toma de la red.
Después quite la batería y fíjela a la videocámara. Para parar la carga, ponga el selector en la posición central.



Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-55H	85
NP-65	105
NP-66H	125
NP-77H/77HD	170
NP-90/90D	215

* Approximate minutes to charge an empty pack using the AC-V25A/V25B/V25C (Lower temperatures require a longer charging time.)

Tiempo de carga

Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-55H	85
NP-65	105
NP-66H	125
NP-77H/77HD	170
NP-90/90D	215

* Minutos aproximados para cargar una batería agotada utilizando el AC-V25A/V25B/V25C. (A bajas temperaturas, el tiempo de carga será más largo.)

Charging and Installing the Battery Pack

Carga y fijación de la batería

Battery Life

Battery pack	Typical recording time**	Continuous recording time***
NP-55	30	65
NP-55H	35	75
NP-65	50	95
NP-66H	60	120
NP-77H/77HD	85	165
NP-90/90D	105	200

** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Important!

Use the battery completely before re-charging!

Before you recharge the battery, make sure the battery has been used up (discharged) completely.
Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and the red lamp flash rapidly in the viewfinder.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.

Duración de la batería

Battery pack	Tiempo de vediofilmación típica**	Tiempo de videofilmación continua***
NP-55	30	65
NP-55H	35	75
NP-65	50	95
NP-66H	60	120
NP-77H/77HD	85	165
NP-90/90D	105	200

** Minutos aproximados cuando videofilme repitiendo el inicio/la parada de la grabación, el zoom y la conexión/desconexión de la alimentación. Es posible que la duración de la batería actual sea más corta.

*** Tiempo aproximado de videofilmación continua en interiores.

¡Importante!

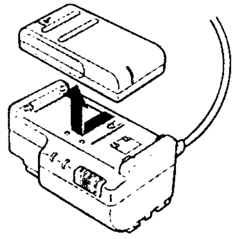
¡Utilice completamente la batería antes de recargarla!

Antes de recargar la batería, asegúrese de que la batería esté completamente agotada (descargada).
La carga repetida sin la batería completamente descargada hará que la capacidad de la misma disminuya. Sin embargo, será posible recuperar la capacidad original de la batería si la vuelve a utilizar y cargar por completo.

Para utilizar la batería completamente, extraiga el videocassette, deslice el selector POWER hasta CAMERA, y con la batería fijada deje la videocámara hasta que en el visor parpadeen rápidamente el indicador ▭ y la lámpara roja.

Para quitar la batería

Deslícela en el sentido de la flecha.



Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the mains lead is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, reconnect the mains lead and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

Notas sobre la carga de la batería

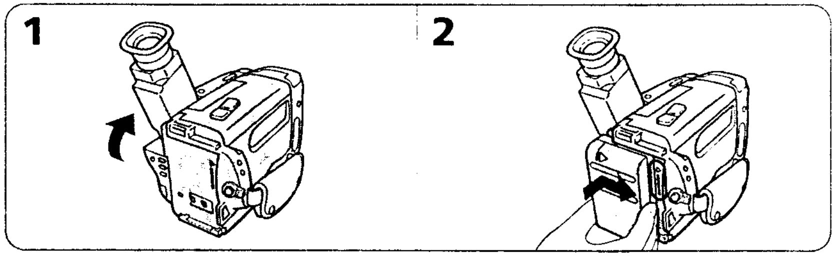
- Es normal que la lámpara POWER permanezca encendida durante un momento después de que haya quitado la batería y desconectado el cable de alimentación cuando finalice la carga.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable y a poner el selector en CHARGE.
- No podrá operar la videocámara empleando el adaptador de alimentación de CA mientras esté cargando la batería.

Installing the Battery Pack

(1) Lift up the viewfinder. **(2)** Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.

Fijación de la batería

(1) Levante el visor. **(2)** Alinee el lado derecho de la batería con la línea blanca de la videocámara, y deslice la batería hacia la derecha.

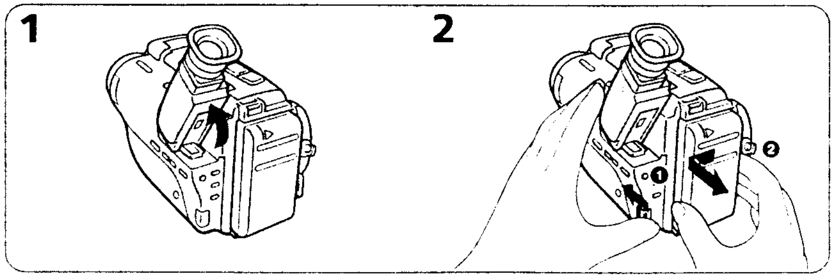


Removing the Battery Pack

(1) Lift up the viewfinder. **(2)** While pressing BATT, slide the battery pack to the left.

Para quitar la batería

(1) Levante el visor. **(2)** Manteniendo presionado BATT, deslice la batería hacia la izquierda.

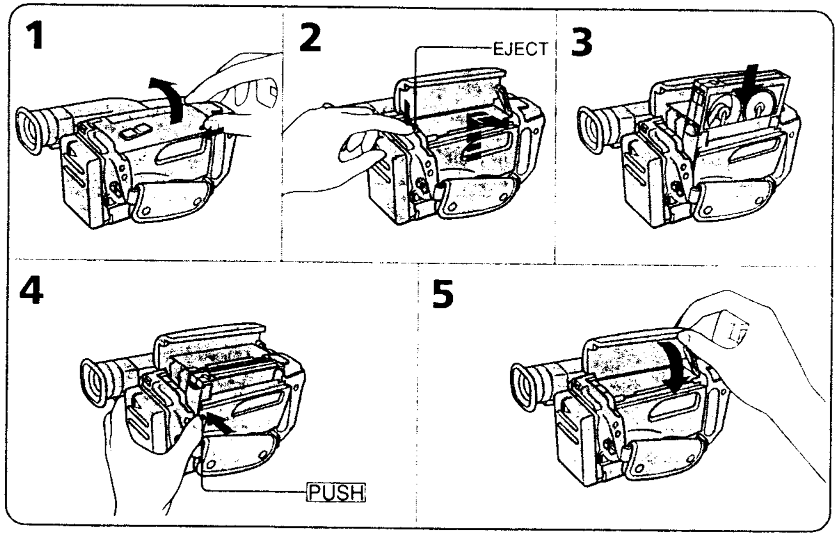


Inserting a Cassette

Make sure that a power source is installed.
(1) While sliding the lid lock, lift up the lid. Then open it. **(2)** Press EJECT. The cassette compartment automatically lifts up and opens. **(3)** Insert a cassette (not supplied) with the window facing out. **(4)** Press the PUSH mark on the cassette compartment to close it. The cassette compartment automatically goes down. **(5)** Close the lid until it locks.

Inserción de un videocassette

Asegúrese de que haya una fuente de alimentación conectada a la videocámara.
(1) Manteniendo deslizado el seguro, levante y abra la tapa. **(2)** Presione EJECT. El compartimiento del videocassette se elevará y abrirá automáticamente. **(3)** Inserte un videocassette (no suministrado) con la ventanilla hacia afuera. **(4)** Presione la marca PUSH en el compartimiento del videocassette para cerrarlo. El compartimiento se bajará automáticamente.
(5) Cierre la tapa hasta que se enganche.



To Eject the Cassette

Press EJECT.

Para expulsar el videocassette

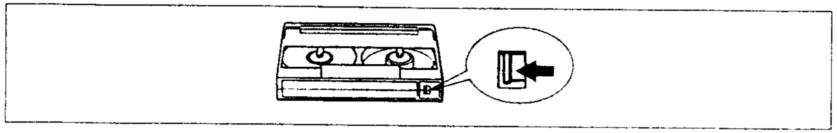
Presione EJECT.

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

Para prevenir el borrado accidental

Deslice la lengüeta del videocassette de forma que la marca roja quede al descubierto. Si intenta grabar con la marca roja al descubierto, en el visor parpadearán los indicadores 📼 y ⏏, y no podrá grabar. Para volver a grabar en esta cinta, deslice la lengüeta de forma que se cubra la marca roja.

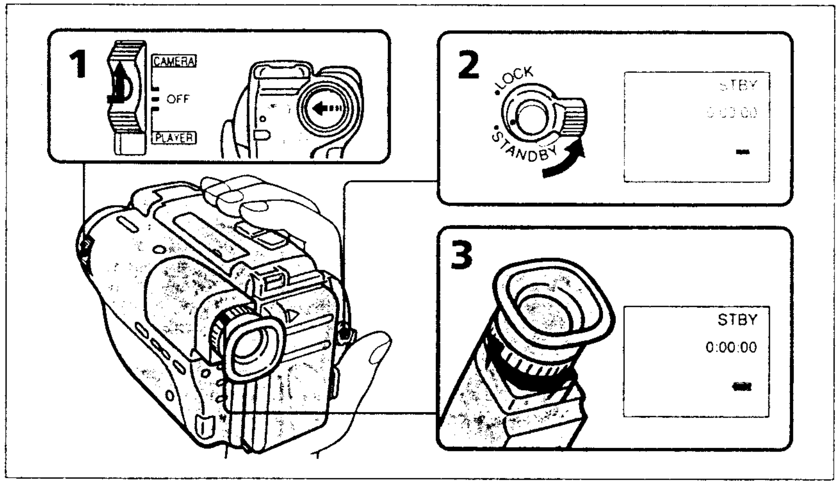


Adjusting the Viewfinder Lens

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is connected to the camcorder.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

Ajuste de la lente del visor

Antes de utilizar la videocámara por primera vez o después de haberla empleado otra persona, ajuste la lente del visor. Asegúrese de que haya una fuente de alimentación conectada a la videocámara.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(2)** Gire STANDBY hacia arriba.
(3) Gire el anillo de ajuste de la lente del visor hasta que los indicadores en el visor queden nítidamente enfocados.

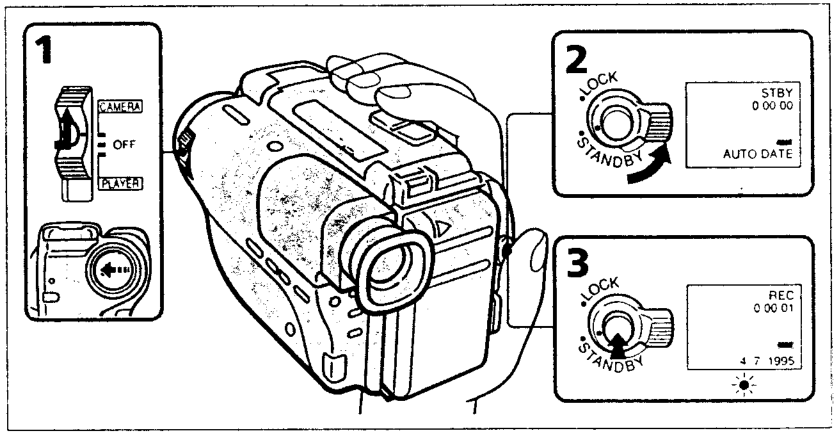


Camera Recording

Videofilmación

Make sure that a power source and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Press START/STOP. The camcorder starts recording and the "REC" indicator appears in the viewfinder.

Asegúrese de que haya una fuente de alimentación conectada y un videocassette insertado. La fecha se grabará automáticamente durante 10 segundos a partir del inicio de la videofilmación [función AUTO DATE (grabación automática de la fecha)]. Esta función sólo trabajará una vez al día. Antes de realizar videofilmaciones irrepetibles, se recomienda realizar una filmación de prueba a fin de comprobar si la videocámara funciona correctamente.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(2)** Gire STANDBY hacia arriba. **(3)** Presione START/STOP. La videocámara comenzará a grabar y en el visor aparecerá el indicador "REC".



To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording [b]

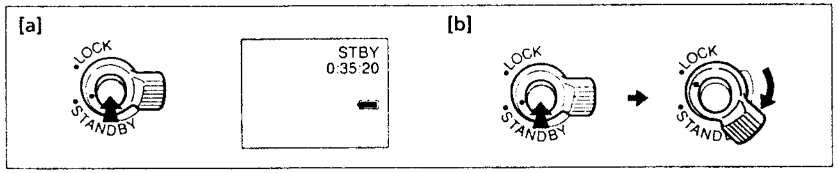
Press START/STOP. Turn STANDBY down, and set the POWER switch to OFF.
Then, eject the cassette (p. 10) and remove the battery (p. 9).

Para detener momentáneamente la grabación [a]

Presione otra vez START/STOP. En el visor aparecerá el indicador "STBY" (**Modo de espera**).

Para finalizar la grabación [b]

Presione START/STOP, gire STANDBY hacia abajo y ponga el selector POWER en OFF.
Después extraiga el videocassette (pág. 10) y quite la batería (pág. 9).



Note on Standby mode

If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape. You can record tapes in SP (standard play) mode only.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET located below the viewfinder. You can know the approximate remaining tape by the remaining tape indicator (p. 62).

See the next page for further information.

Nota sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos o más con el videocassette insertado, la videocámara se apagará automáticamente. Esto evitará que la batería y el videocassette se desgasten. Para restablecer el modo de espera, gire una vez STANDBY hacia abajo y después otra vez hacia arriba. Para comenzar a grabar, presione START/STOP.

Nota sobre la grabación

Cuando grabe desde el comienzo de la cinta, haga que ésta avance unos 15 segundos antes de comenzar la videofilmación actual. Esto evitará que se pierdan las escenas iniciales cuando se reproduzca la cinta. Usted podrá grabar cintas sólo en el modo SP (duración estándar).

Nota sobre el contador de la cinta

El contador de la cinta indicará el tiempo de grabación o reproducción. Empléelo como una guía. Es posible que exista una diferencia de varios segundos del tiempo real. Para ajustar el contador a cero, presione COUNTER RESET situada debajo del visor. Usted podrá saber la duración restante aproximada de la cinta con el indicador de la misma (pág. 62).

Para más información, vea la página siguiente.

Note on the AUTO DATE feature

The clock is set to London for the United Kingdom models and Paris for other European models at the factory. You can reset the clock (p. 35).

You can change the AUTO DATE setting by selecting ON or OFF in the menu system (p. 30).

- The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
  - you reset the date and time.
  - you eject and insert the cassette again.
  - you stop recording within 10 seconds.
  - you set AUTO DATE to OFF once and set to ON in the menu system.
- Once the AUTO DATE feature turns off the date display 10 seconds after the start of recording, the date and time are displayed as follows:
  - if the date display setting has been made, the date is displayed.
  - if the time display setting has been made, the time is displayed.
  - if neither display setting has been made, nothing is displayed.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Notas sobre la función AUTO DATE

El reloj está ajustado en fábrica a la hora de Londres para los modelos destinados al Reino Unido y a la de París para otros modelos europeos. El reloj puede reajustarse (pág. 35).

También podrá cambiar el ajuste de AUTO DATE seleccionando ON u OFF en el sistema del menú (pág. 30).

- La función AUTO DATE se activará una vez al día. Sin embargo, la fecha aparecerá automáticamente más de una vez al día cuando:
  - reajuste la fecha y la hora.
  - extraiga y vuelva a insertar el videocassette.
  - pare la grabación antes de 10 segundos.
  - ponga una vez AUTO DATE en OFF y después vuelva a ponerlo en ON en el sistema del menú.
- Una vez que haya desaparecido la fecha de AUTO DATE después de los 10 segundos del inicio de la grabación, la fecha y la hora se visualizarán en los casos siguientes:
  - cuando realice el ajuste de visualización de la fecha, se visualizará la fecha.
  - cuando realice el ajuste de visualización de la hora, se visualizará la hora.
  - si no realiza ningún ajuste, no se visualizará nada.

Cuando se mueva del interior al exterior (o viceversa)

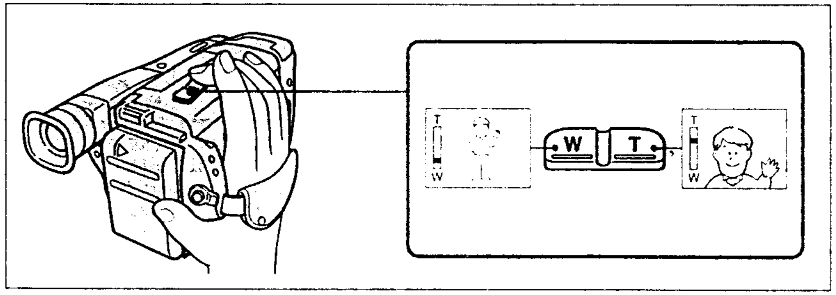
Gire STANDBY hacia arriba y apunte con la videocámara hacia un objeto blanco durante unos 15 segundos de forma que el equilibrio del blanco se ajuste apropiadamente.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. For more professional-looking recordings, use the zoom sparingly.

T side: for telephoto (subject appears closer)

W side: for wide-angle (subject appears farther away)



Zooming Speed

Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.

You can shoot a subject that is at least 1 m (about 3.3 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

Empleo del zoom

El zoom es una técnica de videofilmación que le permite cambiar el tamaño del motivo en la escena. Para filmaciones de aspecto más profesional, utilice el zoom en forma limitada.

Lado T: para telefoto (el motivo se ve cercano)

Lado W: para gran angular (el motivo se ve lejano)

Velocidad del zoom

Presione a fondo la tecla del zoom motorizado para efectuar el zoom a gran velocidad y suavemente para hacerlo a una velocidad relativamente lenta.

Cuando videofilme un motivo empleando el acercamiento con el zoom

Si no puede enfocar nítidamente cuando videofilme con el zoom en el extremo del telefoto, presione el lado W de la tecla del zoom motorizado hasta enfocar nítidamente.

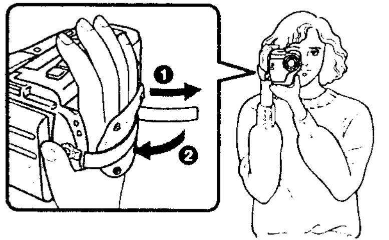
Usted podrá videofilmar un motivo que esté por lo menos a 1 m de la superficie del objetivo en la posición de telefoto, y a 1 cm en la de gran angular.

Hints for Better Shooting

Consejos para videofilmar mejor

For hand-held shots, you'll get better results holding the camcorder according to the following suggestions:

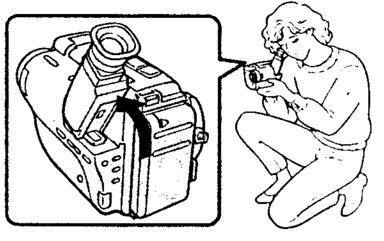
[a]



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. **[b]**

Para videofilmar con la videocámara en las manos, podrá obtener mejores imágenes sujetándola como se indica a continuación:

[b]



- Sujete la videocámara firmemente y asegúrela con la correa de la empuñadura de modo que pueda manipular fácilmente los controles con el pulgar. **[a]**
- Coloque su codo derecho firmemente contra su costado.
- Coloque su mano izquierda debajo de la videocámara para sostenerla.
- Apoye el ocular del visor de la videocamara firmemente contra su ojo.
- Para determinar el plano horizontal, utilice el cuadro del visor como referencia.
- Para obtener un ángulo de videofilmación interesante, usted también podrá grabar desde una posición baja. Para grabar desde una posición baja, gire el visor hacia arriba. **[b]**

Place the camcorder on a flat surface or use a tripod.

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 56). When attaching a non-Sony tripod, make sure the tripod screw is shorter than 6.5 mm (9/32 in). Otherwise, the screw may damage the inner parts of the camcorder.

To Use the Viewfinder as a Sports Finder [c]

With the sports finder, you can monitor the picture while your eye is at a distance from the eyecup. The sports finder is convenient when moving around to shoot scenes. While sliding the viewfinder release knob to the left, flip open the viewfinder.

Cautions on the viewfinder

- Do not pick up the camcorder by the viewfinder. **[d]**
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful in placing the camcorder under sunlight or by the window. **[e]**

Coloque la videocámara en una superficie plana o utilice un trípode

Pruebe colocando la videocámara sobre una mesa u otra superficie plana de altura adecuada. Si posee un trípode para cámara fotográfica, podrá emplearlo también con esta videocámara (pág. 56). Cuando utilice un trípode que no sea Sony, asegúrese de que la longitud del tornillo del trípode sea inferior a 6,5mm. De lo contrario, es posible que el tornillo dañe las partes internas de la videocámara.

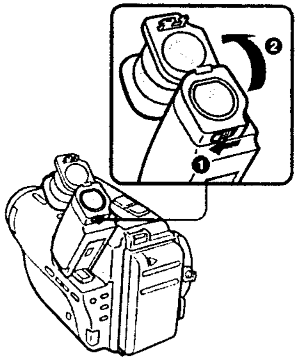
Para utilizar el visor como visor deportivo [c]

Con el visor deportivo, podrá ver las imágenes apartando el ocular del ojo. Es muy útil cuando videofilme moviéndose alrededor de la escena de videofilmación. Manteniendo deslizado el mando de liberación del visor hacia la izquierda, abra el visor.

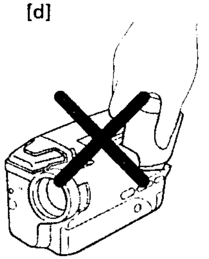
Precauciones sobre el visor

- No sujete la videocámara por el visor. **[d]**
- No deje la videocámara con el visor apuntando hacia el sol. Es posible que el interior del visor se deforme. Tenga cuidado al dejar la videocámara bajo el sol o cerca de una ventana. **[e]**

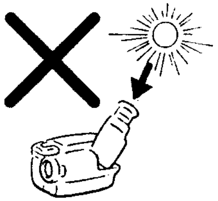
[c]



[d]



[e]



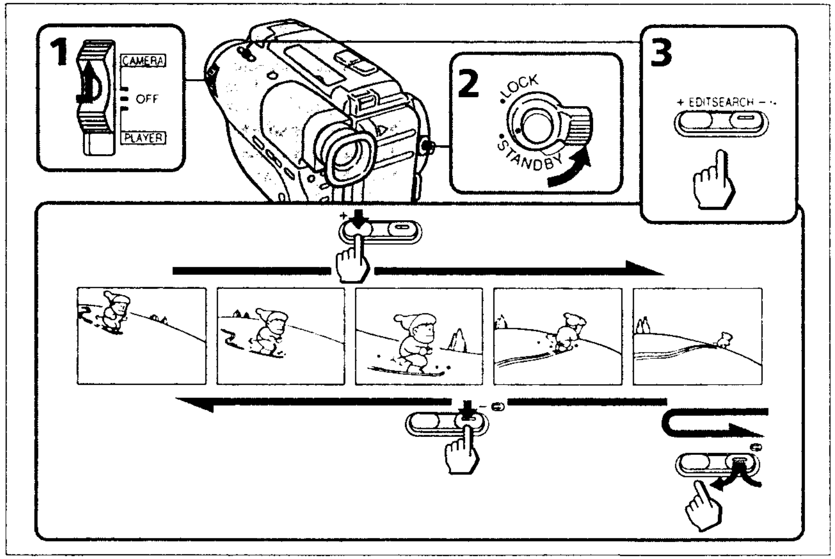
1-7

Checking the Recorded Picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA.
(2) Turn STANDBY up. **(3)** Press EDITSEARCH.
Press the – (⊜) side momentarily, the last few seconds of the recorded portion plays back (**Rec Review**).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).

Verificación de las imágenes grabadas

Utilizando EDITSEARCH, usted podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(2)** Gire STANDBY hacia arriba.
(3) Presione EDITSEARCH. Presione momentáneamente el lado – (⊜). Se reproducirán los últimos segundos de la parte filmada (**Revisión de la grabación**).
Mantenga presionado el lado – de EDITSEARCH hasta que la cinta se retroceda hasta la escena deseada. La última parte filmada se reproducirá. Para avanzar la cinta, mantenga presionado el lado + (**Búsqueda para de edición**).



To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Para reanudar la grabación

Presione START/STOP. La grabación se iniciará desde el punto en el que soltó EDITSEARCH. Mientras no extraiga el videocassette, la transición entre la última escena grabada y la siguiente será uniforme.

Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect earphone (not supplied) to the ◎ jack. Play back the tape in PLAYER mode (p. 20).

Para escuchar el sonido durante la contemplación de las imágenes reproducidas en el visor

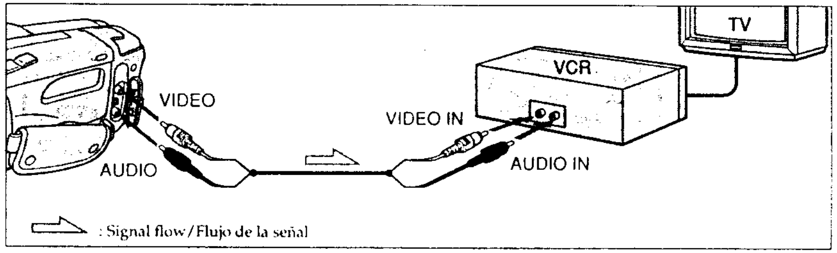
Conecte un auricular (no suministrado) a la toma ◎. Reproduzca la cinta en el modo PLAYER (pág. 20).

Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. It is recommended to use the mains as the power source (p.22).
Connect the camcorder to LINE IN on the VCR by using the the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector to VCR on the TV.

Conexiones para la reproducción

Para la reproducción, usted podrá utilizar esta videocámara para que funcione como videograbadora conectándola a su televisor. Se recomienda utilizar la corriente de la red como fuente de alimentación (pág.22).
Conecte la videocámara a LINE IN de la videograbadora empleando el cable conector de audio/vídeo suministrado. Ponga el selector de entrada de la videograbadora en LINE, y el selector TV/VCR del televisor en VCR.



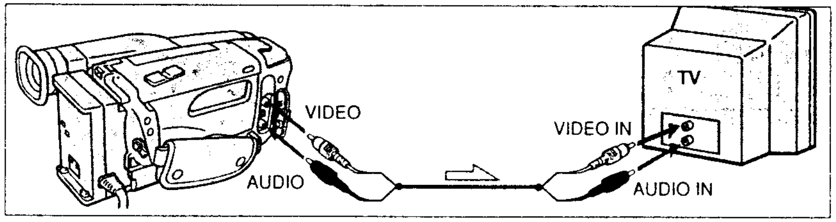
⇨ : Signal flow/Flujo de la señal

Connecting directly to a TV

Connect the camcorder to your TV by using the the supplied A/V connecting cable. Set the TV/VCR selector to VCR on the TV.

Conexión directa a un televisor

Conecte la videocámara al televisor empleando el cable conector de audio/vídeo suministrado. Ponga el selector TV/VCR del televisor en VCR.

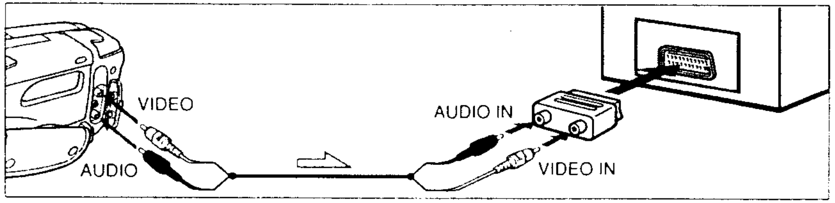


If your TV/VCR has a 21-pin connector (EUROCONNECTOR)

Use the supplied 21-pin adaptor.

Si su televisor o videograbadora posee conector de 21 terminales (EUROCONNECTOR)

Utilice el adaptador de 21 terminales suministrado.



To connect a TV or a VCR without Video/Audio input jacks

Use an RFU adaptor (not supplied)

Conexión a un televior o una videograbadora sin tomas de entrada de video/audio

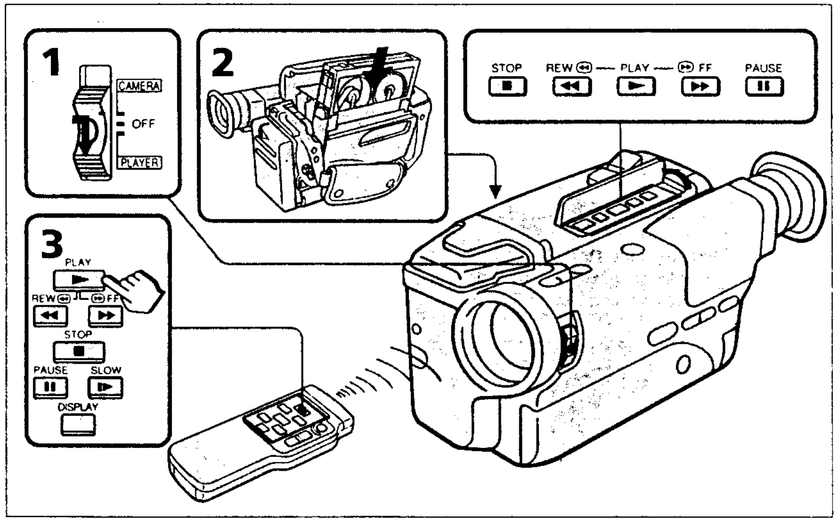
Utilice un adaptador de RFU (no suministrado).

Playing Back a Tape

Reproducción de cintas

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p. 19). You can control playback using the supplied Remote Commander (p. 59).
(1) While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Insert the recorded tape with the window facing out.
(3) Press ▶. Playback starts.

Usted podrá ver las imágenes reproducidas en el visor y también en la pantalla de televisor si conecta la videocámara a un televisor o una videograbadora (pág. 19). También podrá controlar la reproducción con el telemando suministrado (pág. 59).
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta PLAYER. **(2)** Inserte una cinta grabada con la ventanilla hacia afuera. **(3)** Presione ▶. Se iniciará la reproducción.



To stop playback, press ■.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

Para cesar la reproducción, presione ■.
Para rebobinar la cinta, presione ◀◀.
Para hacer que la cinta avance rápidamente, presione ▶▶.

Various Playback Modes

To view a still picture (playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To locate a scene (Picture Search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip Scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▶.

To view the picture in a sequence of stop-motion images

Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture playback in the forward (+) or reverse (–) direction.

To view the picture at 1/5 speed (Slow Playback) (only with the Remote Commander)

Press ❙▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

Diversos modos de reproducción

Para ver una imagen fija (reproducción en pausa)

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▶.

Para localizar una escena (búsqueda de imágenes)

Mantenga presionada ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, suelte la tecla.

Para ver las imágenes a gran velocidad durante el avance rápido o el rebobinado (Skip scan)

Mantenga presionada ◀◀ durante el rebobinado o ▶▶ durante el avance de la cinta. Para reanudar la reproducción normal, presione ▶.

Para ver una secuencia de imágenes fijas

Presione EDITSEARCH en el modo de reproducción en pausa. Si la mantiene presionada, podrá ver las imágenes en el sentido progresivo (+) o regresivo (–).

Para ver la imagen a velocidad 1/5 de la normal (reproducción a cámara lenta) (sólo con el telemando)

Presione ❙▶ del telemando durante la reproducción. Para reanudar la reproducción normal, presione ▶. Si la reproducción a cámara lenta dura más de aproximadamente 1 minuto, ésta cambiará automáticamente a la reproducción normal.

Notas sobre la reproducción

- En los diversos modos de reproducción aparecerán franjas y el sonido se silenciará.
- Cuando el modo de imagen fija dure 5 minutos o más, la videocámara pasará automáticamente al modo de parada.

Para visualizar los indicadores de la pantalla del visor en el televisor

Presione DISPLAY del telemando. Para borrar los indicadores, vuelva a presionar DISPLAY.

Advanced Operations

Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (P.7), the mains, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V25A/V25B/V25C (supplied), AC-S10
Outdoor	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-65, NP-66H, NP-77H/77HD, NP-90/90D
In the car	12 V or 24 V car battery	DC pack DCP-77

Using the Mains

To use the supplied AC-V25A/V25B/V25C AC power adaptor:
(1) Lift up the viewfinder. **(2)** Connect the mains lead to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder. **(3)** Set the selector to VTR (DC OUT).

Operaciones avanzadas

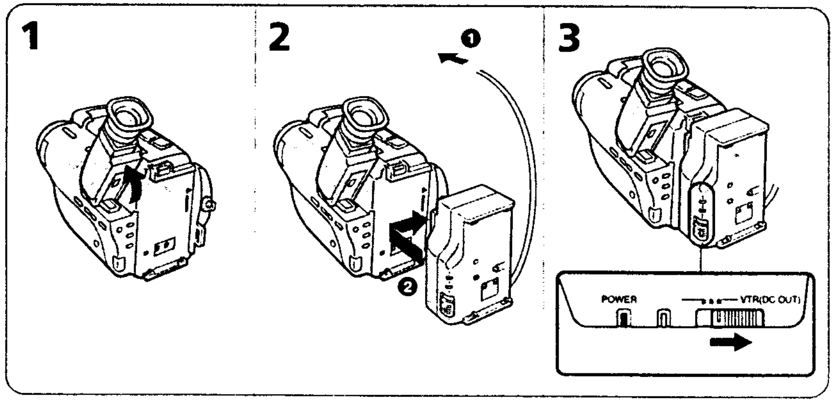
Utilización de fuentes de alimentación alternativas

Con esta videocámara podrá elegir cualquiera de las siguientes fuentes de alimentación: batería (pág.7), corriente de la red, y batería de un automóvil de 12/24 V. Elija la fuente de alimentación apropiada de acuerdo con el lugar donde desee utilizar la videocámara.

Lugar	Fuente de alimentaciùn	Accesorio necesario
Interiores	Corriente de la red	Adaptador de alimentaciùin de CA AC-V25A/V25B/V25C(suministrado), AC-S10
Exteriores	Batería	Batería NP-55 (suministrada), NP-55H, NP-65, NP-66H, NP-77H/77HD, NP-90/90D
En un automóvl	Batería de automóvil de 12 V o 24 V	Paquete de CC DCP-77

Utilización con la corriente de la red

Para utilizar el adaptador de alimentación de CA AC-V25A/V25B/V25C suministrado:
(1) Levante el visor. **(2)** Conecte el cable de alimentación a una toma de la red, y la base del adaptador de alimentación de CA a la superficie de montaje de la batería de la videocámara.
(3) Ponga el selector en VTR (DC OUT).



WARNING

Mains lead must only be changed at qualified service shop.

PRECAUTIONS

The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, try again.

To remove the adaptor

The adaptor is removed in the same way as the battery pack. (p. 9)

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of a car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack

The DC pack is removed in the same way as the battery pack (p. 9).

Options for Charging the Battery Pack

AC-S10 AC power adaptor:
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

This mark indicates that this product is a genuine product related to our 8mm video equipment.
When purchasing our 8mm video equipment, we recommend that you purchase related 8mm video products provided with the same mark or products provided with our logotype mark.

ADVERTENCIA

El cable de alimentación de la red deberá cambiarse solamente en una estación de servicios cualificada.

PRECAUCIÓN

Este aparato no se desconectará de la fuente de alimentación de CA (red) mientras esté enchufado en una toma de la misma, incluso aunque haya desconectado su alimentación.

Notas sobre la lámpara POWER

- Es normal que esta lámpara permanezca encendida durante un momento aunque desenchufe la unidad después de utilizarla.
- Cuando la lámpara POWER no se encienda, ponga el selector en la posición central y desconecte el cable de alimentación. Aproximadamente un minuto después, trate otra vez.

Para quitar el adaptador

Quítelo igual que la batería (pág.9).

Utilización con la batería de un automóvil

Emplee un paquete de CC DCP-77 (no suministrado). Conecte el cable del paquete de CC a la toma del encendedor de cigarrillos de un automóvil (12 o 24 V). Conecte el paquete de CC a la superficie de montaje de la batería de la videocámara.

Para quitar el paquete de CC

Quítelo igual que la batería (pág 9).

Opciones para cargar la batería

Adaptador de alimentación de CA AC-S10:
Como este adaptador posee función de descarga, usted podrá cargar la batería independientemente de que ésta se haya agotado o no.

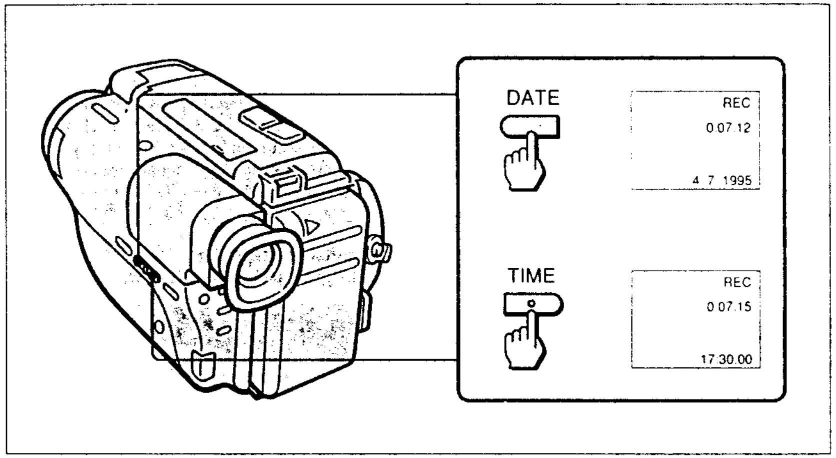
Esta marca indica que este producto es genuino y esta relacionado con nuestro equipo de video de 8mm. Al la hora de adquirir nuestro equipo de video de 8mm, recomendamos elegir los productos de video relacionados de 8mm que dispongan de esta marca u otros con nuestro logotipo.

Recording with the Date or Time

Before you start recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is set to London for the United Kingdom models and Paris for other European models at the factory.

Grabación de la fecha o la hora

Antes de comenzar la videofilmación, presione DATE o TIME. Usted podrá grabar con las imágenes la fecha o la hora visualizada en el visor. La fecha y la hora no podrán grabarse al mismo tiempo. Además de los indicadores de la fecha y la hora, no se grabará ninguno de los demás indicadores del visor.
El reloj ha sido ajustado en fábrica a la hora de Londres para los modelos destinados al Reino Unido y a la de París para los demás modelos europeos.



To Stop Recording with the Date or Time

Press DATE or TIME again. Recording continues.

Para cesar la grabación de la fecha o la hora

Vuelva a presionar DATE o TIME. La grabación de las imágenes continuará.

Fade-in and Fade-out

You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

When Fading in [a]

(1) During the camcorder is in Standby mode, press FADER. The fade indicator starts flashing. **(2)** Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing. **(2)** Press START/STOP to stop recording. The fade indicator stops flashing and recording stops.

Aumento gradual y desvanecimiento

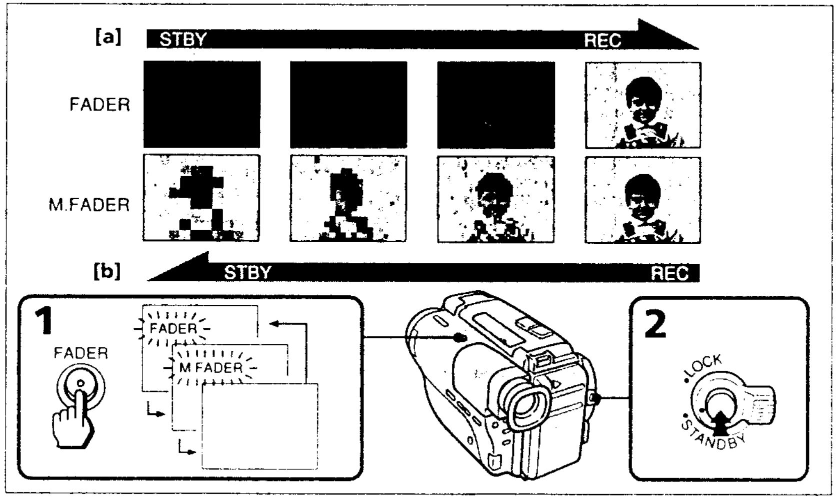
Usted podrá aumentar o desvanecer una imagen para dar a su videofilmación un aspecto profesional. Cuando realice el aumento gradual, la imagen aparecerá gradualmente desde un fondo negro o mosaico mientras que el sonido también aumenta gradualmente. Cuando realice el desvanecimiento, la imagen desaparecerá gradualmente hasta convertirse en una pantalla negra o mosaico mientras disminuye el sonido.

Aumento gradual [a]

(1) Mientras la videocámara esté en el modo de espera, presione FADER. El indicador de aumento gradual/desvanecimiento comenzará a parpadear. **(2)** Presione START/STOP para iniciar la videofilmación. El indicador dejara de parpadear.

Desvanecimiento [b]

(1) Durante la videofilmación, presione FADER. El indicador de aumento gradual/ desvanecimiento comenzará a parpadear. **(2)** Presione START/STOP para parar la videofilmación. El indicador dejará de parpadear y la grabación cesará.



To Cancel the Fade-in/out Function

Before pressing START/STOP, press FADER once or twice until the fade indicator disappears.

When the date/time indicator is displayed

The date/time does not fade in nor fade out.

Para cancelar la función de aumento gradual/ desvanecimiento

Antes de presionar START/STOP, presione una o dos veces FADER hasta que desaparezca el indicador de aumento gradual/desvanecimiento.

Cuando se visualice el indicador de la fecha/hora

Estos indicadores no aumentaran gradualmente ni se desvaneceran.

Using the PROGRAM AE Function

Empleo de la función PROGRAM AE

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action or night views.

Usted podrá seleccionar entre cuatro modos de PROGRAM AE (exposición automática programada), de acuerdo con la condición de videofilmación. Con la función de PROGRAM AE, podrá obtener un efecto de "Retrato" (el motivo enfocado y el fondo desenfocado), captar una acción a gran velocidad o grabar vistas nocturnas.

Selecting the Best Mode

Select the best mode by using the following examples.

Selección del modo apropiado

Seleccione el modo apropiado consultando los siguientes ejemplos.

1-11

Portrait mode
- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming in on a subject in telephoto

Sports mode
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

High-speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

Twilight mode
Recording night views neon signs or fireworks

Modo de retrato
- Un motivo fijo como una persona o una flor
- Un motivo detrás de un obstáculo como una red
- Aumentar un motivo en el modo de telefoto

Modo de deportes
- Videofilmación de escenas de deportes de exteriores como fútbol, tenis, golf o esquí
- Videofilmación de paisajes desde un automóvil en marcha

Modo de obturación a alta velocidad
- Un swing de golf o un partido de tenis en un día claro con la pelota visualizada claramente
- Reproducir ciertas escenas con movimientos a gran velocidad en una imagen clara y nítida

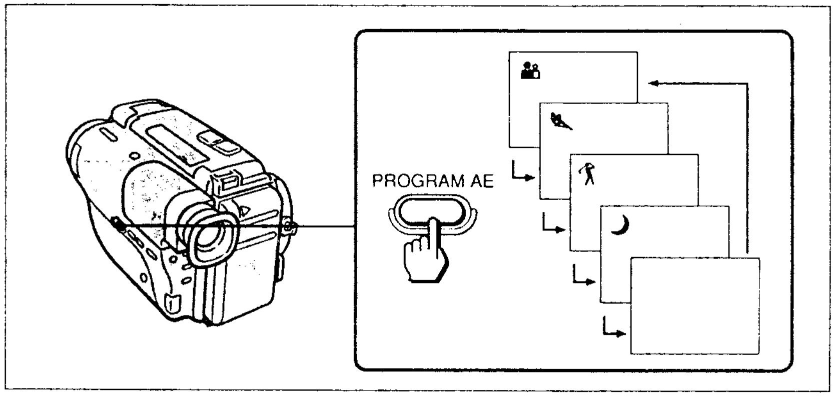
Modo de crepúsculo
Videofilmación de vistas nocturnas, letreros de neón o fuegos artificiales.

Using the PROGRAM AE Function

Press PROGRAM AE repeatedly so that the desired mode indicator appears inside the viewfinder.

Empleo de la función PROGRAM AE

Presione repetidamente PROGRAM AE de forma que en el visor aparezca el indicador del modo deseado.



Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode – between 1/50 to 1/2000
Sports mode – between 1/50 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/50
Normal mode – 1/50

Nota sobre la velocidad de obturación

La velocidad de obturación en cada modo PROGRAME AE es el siguiente:
Modo de retrato – entre 1/50 y 1/2000
Modo de deportes – entre 1/50 y 1/500
Modo de obturación a alta velocidad – 1/4000
Modo de crepúsculo – 1/50
Modo normal – 1/50

Shooting with Backlighting

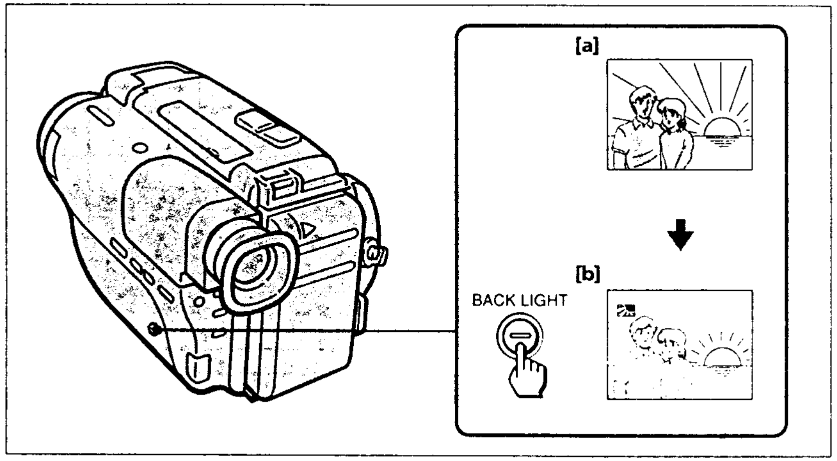
When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT.

Press BACK LIGHT. The ▣ indicator appears inside the viewfinder.

Videofilmación a contraluz

Cuando videofilme un motivo con la fuente de iluminación detrás de él o a contraluz, utilice BACK LIGHT.

Presione BACK LIGHT. En el visor aparecerá el indicador ▣.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Press BACK LIGHT again to let the ▣ indicator go out under normal lighting condition. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under following conditions:

- On the snow e.g. at the ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

[a] El motivo está demasiado oscuro debido al contraluz.
[b] El motivo se ve claro con la compensación del contraluz.

Después de la videofilmación

Vuelva a presionar BACK LIGHT de forma que desaparezca el indicador ▣ con la iluminación en la condición normal. De lo contrario, las imágenes se grabarán demasiado brillantes con la iluminación en condición normal.

Esta función también será efectiva en las siguientes condiciones:

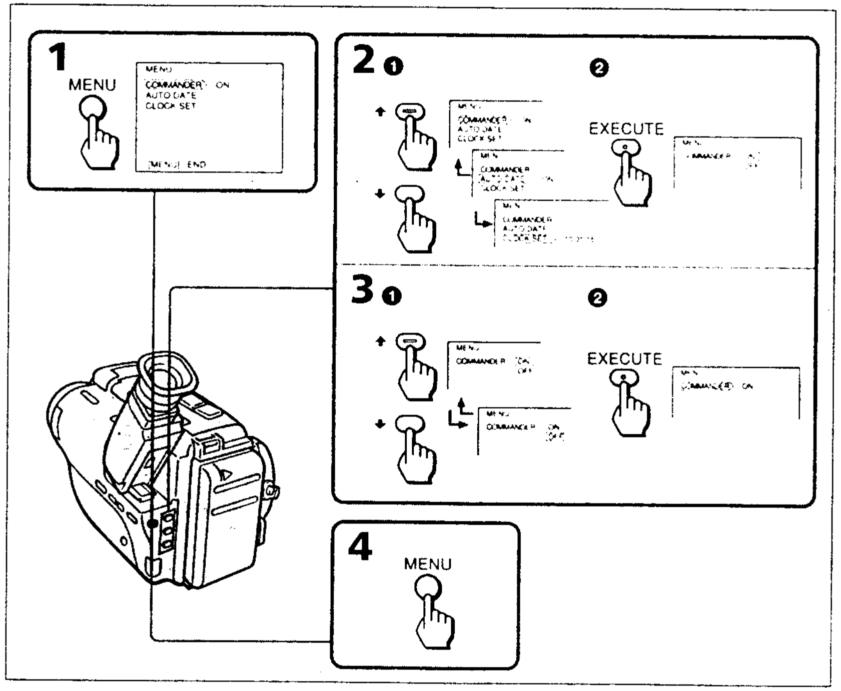
- Paisaje de nieve, por ej. en un campo de esquí.
- En una playa con luz solar fuerte.
- Un motivo con una fuente de iluminación cercana o un espejo que refleje luz.
- Un motivo blanco contra un fondo blanco. Especialmente cuando videofilme una persona vestida con ropa brillante como de seda o fibra sintética sin utilizar la función BACK LIGHT, el rostro tenderá a grabarse oscuro.

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions. **(1)** Press MENU to display the menu in the viewfinder. **(2)** Press ↑ or ↓ to select the desired item, then press EXECUTE. **(3)** Press ↑ or ↓ to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3. **(4)** Press MENU to erase the menu display.

Cambio de los ajustes de modo

Usted podrá cambiar los ajustes de modo en el sistema del menú para disfrutar más de las funciones de la videocámara.
(1) Presione MENU para visualizar el menú en el visor. **(2)** Presione ↑ o ↓ para seleccionar el ítem deseado y después presione EXECUTE.
(3) Presione ↑ o ↓ para seleccionar el modo deseado, y después presione EXECUTE. Cuando desee cambiar otros ítems, repita los pasos 2 y 3.
(4) Presione MENU para borrar la visualización del menú.



Note on BACK UP

When BACK UP indicator appears on the menu display, the settings of items are retained even when the battery is removed, as long as the lithium battery is in place.

See the next page for further information.

Nota sobre BACK UP

Cuando el indicador BACK UP aparezca en la visualización del menú, los ajustes de los ítems se mantendrán aunque quite la batería mientras esté colocada la pila de litio.

Para más información, vea la página siguiente.

Changing the Mode Settings

Selecting the Mode Setting of Each Item

Common Item in CAMERA and PLAYER Modes

COMMANDER <ON/OFF>

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander for the camcorder.

Items in CAMERA mode

AUTO DATE <ON/OFF>

- Select ON to record the date of recording automatically (AUTO DATE feature p. 14).
- Select OFF otherwise.

CLOCK SET

Select this item when you need to reset the clock (p. 35).

Item in PLAYER mode

EDIT <ON/OFF>

- Select ON to minimize the picture deterioration when editing.
- Normally select OFF.

Cambio de los ajustes de modo

Selección de los ajustes de modo en cada ítem

Ítem comune en los modos CAMERA y PLAYER

COMMANDER <ON/OFF>

- Seleccione ON cuando desee emplear el telemando suministrado para controlar la videocámara.
- Seleccione OFF cuando no vaya a emplear el telemando suministrado.

Ítems en el modo CAMERA

AUTO DATE <ON/OFF>

- Seleccione ON para que la fecha de la grabación se grabe automáticamente (función AUTO DATE, pág. 14).
- En caso contrario, seleccione OFF.

CLOCK SET

Seleccione este ítem cuando sea necesario reajustar el reloj (pág. 35).

Item en el modo PLAYER

EDIT <OFF/ON>

- Seleccione ON para mantener al mínimo la degradación de la imagen durante la edición.
- Normalmente seleccione OFF.

Editing onto Another Tape

You can create your own video programme by editing with any other **8** 8 mm, **Hi8** Hi8, VHS VHS, **S**VHS S-VHS, VHS**C** VHSC, **S**VHS**C** S-VHSC, or **B** Betamax VCR that has video/audio inputs.

Before Editing

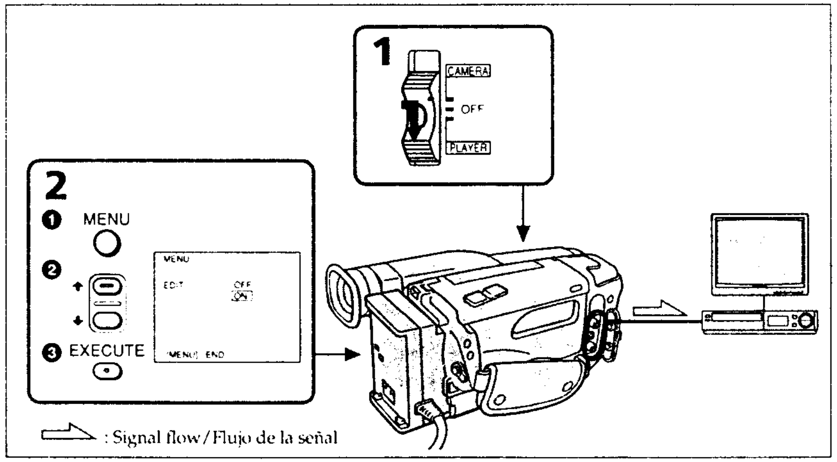
After connecting the camcorder to the VCR, **(1)** Slide the POWER switch to PLAYER. **(2)** Set EDIT mode to ON in the menu system to minimise the picture deterioration (p. 30).

Edición en otra cinta

Usted podrá crear su propio programa de vídeo editando con una videograbadora de formato de 8mm **8**, 8mm de Hi8 **Hi8**, VHS VHS, S VHS **S**VHS, VHSC VHS**C**, S-VHSC **S**VHS**C** o Betamax **B** que disponga de entradas de vídeo/audio.

Antes de la edición

Después de conectar la videocámara a la videograbadora,
(1) Deslice el selector POWER hasta PLAYER.
(2) Ajuste el modo de EDIT a ON en el sistema del menú para mantener al mínimo el deterioro de la imagen (pág. 30).



: Signal flow / Flujo de la señal

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. **(2)** Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. **(3)** Set the recording VCR to recording pause mode. **(4)** Press **II** on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

Edición

(1) Inserte un videocassette en blanco (o una cinta en la que desee realizar la regrabación) en la videograbadora y la cinta grabada en la videocámara. **(2)** Reproduzca la cinta grabada en la videocámara hasta localizar el punto en el que desee comenzar la edición, y después ponga la videocámara en el modo de reproducción en pausa. **(3)** Ponga la videograbadora en el modo de grabación en pausa. **(4)** Presione simultáneamente **II** de la videocámara y la videograbadora para comenzar la edición.

Para editar más escenas

Repita los pasos 2 a 4.

To Stop Editing

Press ■ STOP on the camcorder and VCR. When you finish editing, reset EDIT mode to OFF (p. 30).

Use of the EDITSEARCH button

To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on DISPLAY function

If you have displayed the viewfinder screen indicators on the TV (DISPLAY function), erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Para cesar la edición

Presione ■ STOP de la videocámara y la videograbadora. Cuando finalice la edición, reajuste el modo de EDIT a OFF (pág. 30).

Empleo de la tecla EDITSEARCH

Usted podrá reproducir una cinta en sentido progresivo o regresivo, manteniendo presionada EDITSEARCH durante la reproducción en pausa. Si la presiona en forma intermitente, podrá reproducir sucesivamente las imágenes fijas a ciertos intervalos.

Nota sobre la función DISPLAY

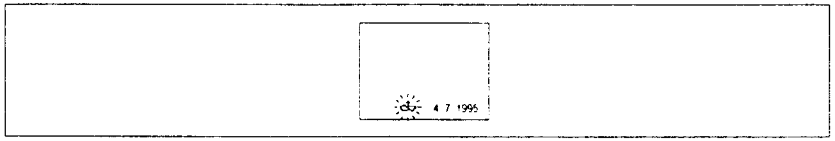
Si ha visualizado los indicadores de la pantalla del visor en el televisor (función DISPLAY), borre los indicadores presionando DISPLAY del telemando para que no se superpongan sobre la cinta editada.

Changing the Lithium Battery In the Camcorder

Reemplazo de la pila de litio de la videocámara

Your camcorder is supplied with the lithium battery installed. The lithium battery lasts for about 1 year under normal operation. When the battery becomes weak or dead, ⚠ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with the Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

En la videocámara se ha insertado en fábrica una pila de litio. La pila de litio durará aproximadamente 1 año si se utiliza en condiciones normales de funcionamiento. Cuando la pila de litio se debilite o agote, el indicador ⚠ parpadeará en el visor durante unos 5 segundos cuando ponga el selector POWER en CAMERA. En esete caso, **reemplace la pila por otra de litio CR2025 Sony. El empleo de otra pila puede suponer un riesgo de incendio o explosión.**

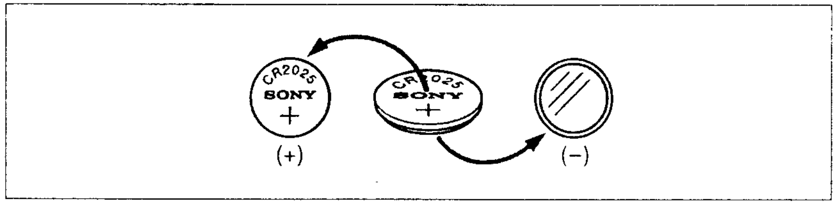


Note on Lithium Battery

Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**

Nota sobre la pila de litio

Tenga en cuenta que la pila de litio posee un terminal positivo (+) y otro negativo (–) como se ilustra. **Cerciórese de colocar la pila de litio de forma que los terminales de la pila coincidan con los de la videocámara.**



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

ADVERTENCIA

Si trata mal la pila, puede explotar. No recargue, desarme, ni tire la pila al fuego.

Precaución

Mantenga la pila de litio fuera de alcance de los niños. Si alguien traga la pila, consulte inmediatamente a un médico.

Changing the Lithium Battery In the Camcorder

Changing the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and the other items with BACK UP indicator in the menu system.

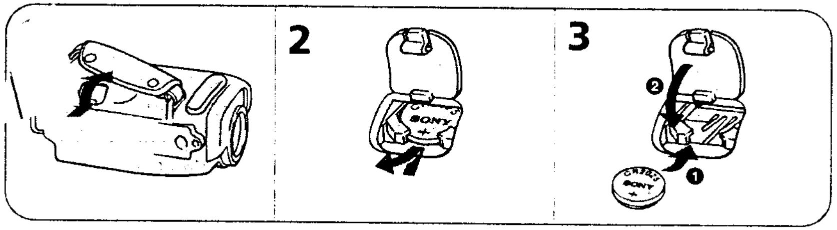
(1) Open the lid of the lithium battery compartment. **(2)** Push the battery down once and pull it out from the holder. **(3)** Install the lithium battery with the positive (+) side facing out. Close the lid of the battery compartment.

Reemplazo de la pila de litio de la videocámara

Reemplazo de la pila de litio

Durante el reemplazo la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De lo contrario, deberá reajustar la fecha, la hora y los otros ítems con el indicador BACK UP en el sistema del menú.

(1) Abra la tapa del compartimiento de la pila de litio. **(2)** Empuje la pila una vez hacia abajo y extráigala de su compartimiento. **(3)** Coloque una pila de litio nueva con la cara positiva (+) hacia afuera. Cierre la tapa del compartimiento.



Resetting the Date and Time

Reset the date and time in the menu system.

(1) Press MENU to display the menu.

(2) Press ↑ or ↓ to select CLOCK SET item (p. 30). Press EXECUTE.

(3) Set year, month, day, time, minute by pressing ↑, ↓ and EXECUTE. Note that when you keep ↑ and ↓ pressed, the digits advance faster.

(4) Press MENU to erase the menu display.

Reajuste de la fecha y la hora

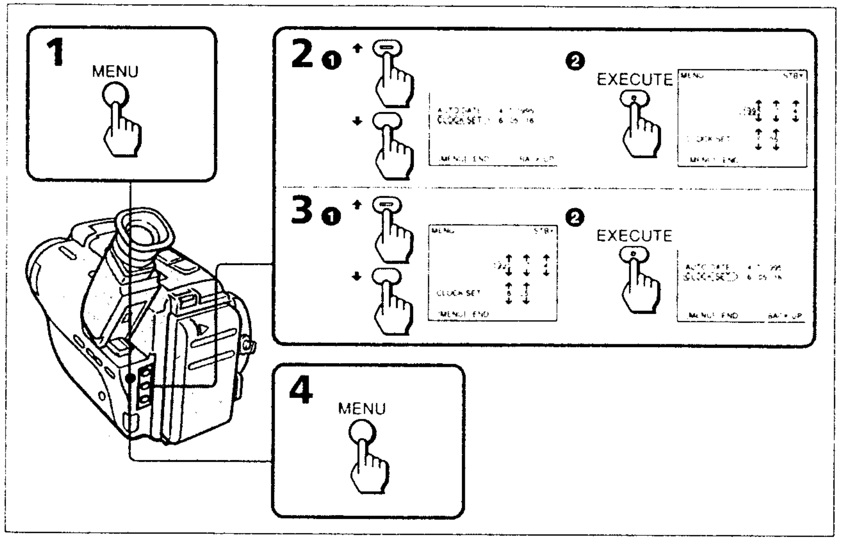
Reajuste la fecha y la hora en el sistema del menú.

(1) Presione MENU para visualizar el menú.

(2) Presione ↑ o ↓ para seleccionar el ítem CLOCK SET (pág. 30). Presione EXECUTE.

(3) Ajuste el año, mes, día, hora y minutos presionando ↑, ↓ y EXECUTE. Tenga en cuenta que si mantiene presionada ↑ o ↓, los dígitos avanzarán con mayor rapidez.

(4) Presione MENU para borrar la visualización del menú.



To Correct the Date and Time Setting

Repeat steps 2 to 3.

To Check the Date and Time

Press DATE to display the date indicator in the viewfinder. Press TIME to display the time indicator. When you press the same button again, the indicator goes out.

The year indicator changes as follows:

1995 → 1996 ······ 2024

Para corregir los ajustes de la fecha y la hora

Repita los pasos 2 a 3.

Para comprobar la fecha y la hora

Presione DATE de forma que el indicador de la fecha aparezca en el visor. Presione TIME para visualizar el indicador de la hora. Cuando vuelva a presionar la misma tecla, el indicador se apagará.

El indicador del año cambiará como sigue:

1995 → 1996 ······ 2024

Playback Modes

The playback mode is selected automatically according to the recording system (SP/LP mode) in which the tape was recorded.

LP (long play) mode
When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record tape in LP mode.

Foreign 8 mm video
You cannot play software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 47 to check the TV colour system of foreign countries.

Modos de reproducción

El modo de reproducción se seleccionará automáticamente de acuerdo con el sistema de grabación (modo SP/LP) en el que se haya grabado la cinta.

Modo LP (duración larga)
Cuando reproduzca una cinta grabada en el modo LP, el indicador LP se encenderá en el vidor. Con esta videocámara no podrá grabar las cintas en el modo LP.

Videocassette de 8 mm de otro sistema
Con esta videocámara no podrá reproducir un software grabado en un sistema de televisión en color diferente. Como el sistema de televisión en color difiere en cada país, es posible que no pueda reproducir un software previamente grabado. Con respecto al sistema de televisión en color de otros países, consulte la página 47.

Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in Cold Environment

Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

To Save Battery Power

Turn the STANDBY switch on the camcorder down when not recording to save battery power. [a] on page 38.
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a cassette is inserted or removed.

Consejos para utilizar la batería

En esta sección se explica la forma de obtener el máximo rendimiento de la batería.

Preparación de la batería

Lleve siempre baterías adicionales

Prepare suficientes baterías como para poder alimentar la videocámara el doble o el triple del tiempo de filmación planeada.

La duración de la batería se acortará en climas fríos.

La eficacia de la batería disminuirá y se gastará con mayor rapidez si graba en climas fríos.

Para ahorrar batería

Gire el interruptor STANDBY de la videocámara hacia abajo cuando no vaya a videofilmar a fin de ahorrar batería. [a] de la página 38.
Aunque detenga y reinicie la filmación, obtendrá una grabación sin transiciones bruscas entre las escenas. Mientras encuadre el motivo o seleccione un ángulo, u observe a través del visor, el objetivo se moverá automáticamente y se utilizará la batería. La batería también se utilizará al insertar o extraer un videocassette.

Tips for Using the Battery Pack

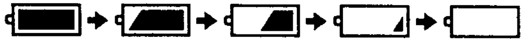
Consejos para utilizar la batería

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.

Cuándo reemplazar la batería

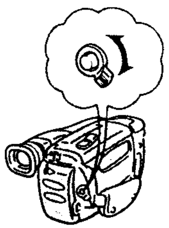
Mientras esté utilizando la videocámara, el indicador de carga restante de la batería disminuirá gradualmente a medida que se reduzca la carga de la batería.



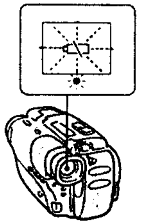
When the remaining battery indicator reaches the lowest point, the ⌧ indicator appears and starts flashing in the viewfinder. **[b]**
When the ⌧ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

Cuando el indicador de carga restante de la batería llegue al punto mínimo, en el visor aparecerá el indicador ⌧ y comenzará a parpadear. **[b]**
Cuando el indicador ⌧ en el visor cambie de parpadeo lento a rápido mientras grabe, ponga el selector POWER de la videocámara en OFF y reemplace la batería. Deje el videocassette en la videocámara para obtener una grabación sin transiciones bruscas entre las escenas después de haber reemplazado la batería.

[a]



[b]



Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with the remaining battery indicator (not supplied). The indicator of the battery pack is more accurate.

Nota sobre el indicador de carga restante de la batería

Es posible que este indicador de la videocámara señale una capacidad restante diferente a la indicada por el indicador de la batería (no suministrada). El indicador de la batería es más preciso.

Notes on the Rechargeable Battery Pack

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]**

The Life of the Battery Pack

If the ⌧ indicator flashes rapidly just after turning on the camcordrer with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Notas sobre la batería

La batería se calentará

Durante la carga o la grabación, la batería se calentará.
Esto se debe a la energía generada y al cambio químico que se producen en el interior de la batería, y no significa problema alguno.

Cuidado de la batería

- Después de haber empleado la batería quítela de la videocámara y guárdela en un lugar fresco. Mientras la batería esté fijada a la videocámara, circulará una pequeña cantidad de corriente incluso aunque el selector POWER esté en OFF. Esto acortará la duración útil de la batería.
- La batería estará siempre descargándose, incluso aunque no se utilice. Por lo tanto, se recomienda cargarla antes de emplear la videocámara.

Utilización del señalador de la batería

Este señalador servirá para saber si la batería está cargada o no. Póngalo en la posición "sin marca" cuando finalice la carga.
Póngalo en la posición de la "marca roja" cuando la batería esté descargada completamente (o en el sentido que desee y pueda recordar usted mismo). **[c]**

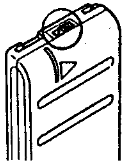
Vida útil de la batería

Si el indicador ⌧ parpadea rápidamente después de haber conectado la alimentación de la videocámara con una batería completamente cargada, habrá que reemplazarla por otra nueva completamente cargada.

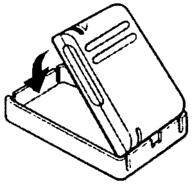
Temperatura durante la carga

Cargue la batería a una temperatura comprendida entre 10 y 30°C. A bajas temperaturas, la carga tardará más en realizarse.

[c]



[d]



Tips for Using the Battery Pack

Notes on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ⊂⊃ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the ⊂⊃ indicator flashes rapidly.
- When you use the AC-S10 power adaptor, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Consejos para utilizar la batería

Notas sobre la carga

Baterías nuevas

Una batería nueva no estará cargada. Antes de utilizarla, cárguela completamente.

Antes de recargar baterías usadas

- Asegúrese de utilizar completamente la batería antes de cargarla.
- Si finaliza la filmación antes de que en el visor aparezca el indicador ⊂⊃, extraiga el videocassette, deslice el selector POWER hasta CAMERA, gire STANDBY hacia arriba y deje la videocámara hasta que el indicador ⊂⊃ parpadee rápidamente.
- Cuando utilice el adaptador de alimentación de CA AC-S10, podrá emplear la función de descarga.
- **Si carga una batería sin descargar hará que la capacidad de la misma disminuya. La capacidad de la batería podrá recuperarse si vuelve a descargar y cargarla completamente.**

Después de no haber utilizado una batería durante mucho tiempo

Recargue la batería después de no haberla utilizado durante mucho tiempo. Si una batería cargada completamente no se utiliza durante mucho tiempo (aproximadamente 1 año), ésta se descargará. Vuelva a cargar la batería, pero en este caso su duración será más corta de lo normal. Después de varios ciclos de carga y descarga, la batería recuperará su capacidad original.

Notas sobre los terminales

Si los terminales (partes metálicas de la parte posterior) no están limpios, la duración de la batería se acortará.

Cuando los terminales no estén limpios o no haya utilizado la batería durante mucho tiempo, fije y quite la batería repetidamente. Esto mejorará el contacto. Además, frote los terminales + y – con un paño o un papel suave.

Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 39.**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Tenga en cuenta lo siguiente

- **Para prevenir accidentes debido a un cortocircuito, no deje que objetos metálicos como un collar entre en contacto con los terminales de la batería. Cuando lleve la batería, fíjele la cubierta de terminales. [d] de la página 39.**
- Mantenga la batería alejada del fuego.
- Mantenga seca la batería.
- No abra ni desarme la batería.
- No la someta a ninguna clase de golpes.

Maintenance Information and Precautions

Información sobre el mantenimiento y precauciones

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

Eject the cassette, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

If the ▣ indicator does not light up when you turn on the power, you can use the camcorder again.

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta, o en el objetivo. En tales condiciones, la cinta puede adherirse al tambor de cabezas y estropearse, o la videocámara puede no funcionar adecuadamente.

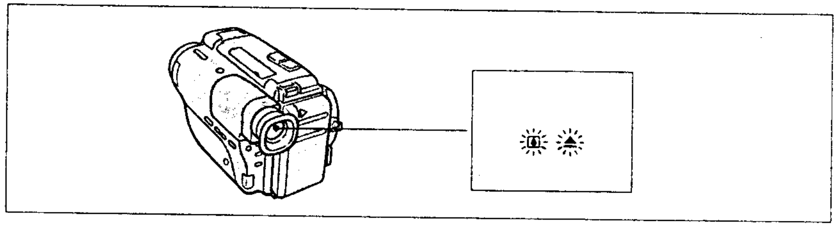
Para evitar la posibilidad de daños en estas circunstancias, la videocámara dispone de sensores de humedad. Sin embargo, tenga en cuenta las precauciones siguientes.

En el interior de la videocámara

Cuando los indicadores ▣ y ⏏ parpadeen en el visor, se habrá condensado humedad en el interior de la videocámara. En este caso, no trabajará ninguna función excepto la de expulsión del videocassette.

Extraiga el videocassette, desconecte la alimentación de la videocámara, y déjela con el compartimiento del videocassette abierto durante aproximadamente 1 hora.

La videocámara podrá volver a utilizarse cuando el indicador ▣ no aparezca al volver a conectar la alimentación.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert cassette and press a tape transport button (▶ PLAY, etc.), the ⏏ indicator flashes in the viewfinder. If this happens, none of the functions except cassette ejection will work.

Eject the cassette and leave it for about 1 hour.

If the ⏏ indicator does not light up when you insert the cassette and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder. **(2)** Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

En la superficie de la cinta

Si se ha condensado humedad en la superficie de la cinta, cuando inserte un videocassette y presione una tecla de transporte de la cinta (▶ PLAY, etc.), en el visor parpadeará el indicador ⏏. En este caso, no trabajará ninguna función excepto la de expulsión del videocassette.

Extraiga el videocassette, y déjelo durante aproximadamente 1 hora.

La videocámara podrá volver a utilizarse cuando el indcador ⏏ no aparezca al insertar un videocassette y presionar una de las teclas de transporte de la cinta.

En el objetivo

No aparecerá ningún indicador, pero la imagen se volverá borrosa. Desconecte la alimentación y no utilice la videocámara durante aproximadamente 1 hora.

Cómo prevenir la condensación de humedad

Cuando traslade la videocámara de un lugar frío a otro cálido, coloque la videocámara en una bolsa de plástico y deje que se adapte a las condiciones ambientales de la habitación durante cierto tiempo.

(1) No se olvide de cerrar firmemente la bolsa de plástico que contiene la videocámara. **(2)** Saque la videocámara de la bolsa cuando la temperatura del aire del interior de la bolsa haya alcanzado la ambiental (después de 1 hora aproximadamente).

Maintenance Information and Precautions

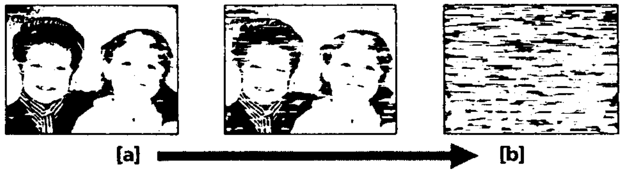
Información sobre el mantenimiento y precauciones

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When ⊗ appears in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be contaminated.

Limpieza de las cabezas de vídeo

Para asegurar imágenes claras, limpie periódicamente las cabezas de vídeo. Cuando en el visor aparezca ⊗ o las imágenes reproducidas sean "ruidosas" o difíciles de ver, es posible que las cabezas de vídeo estén contaminadas.



[a] Slight contamination
[b] Critical contamination

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

[a] Contaminación ligera
[b] Contaminación crítica

Cuando aparezcan estas imágenes, limpie las cabezas de vídeo con un cassette de limpieza V8-25CLH Sony (no suministrado). Después de la limpieza, si las imágenes siguen "ruidosas", repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución

No utilice cassettes de limpieza de tipo húmedo adquiribles en tiendas del ramo, ya que podrían dañar las cabezas de vídeo.

Nota

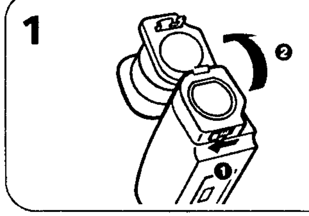
Si el cassette de limpieza V8-25CLH no está disponible en su zona, consulte a un centro de servicios Sony.

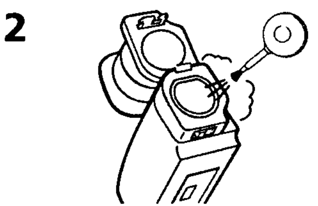
Removing Dust from inside the Viewfinder

(1) While sliding the viewfinder release knob to the left, flip open the viewfinder. **(2)** Clean the surface with a commercially available blower.

Para quitar el polvo del interior del visor

(1) Manteniendo deslizado el mando de liberación del visor hacia la izquierda, abra el visor. **(2)** Limpie la superficie con un soplador disponible en tiendas del ramo.





Precautions

Camcorder Operation

- Operate the camcorder using 6.0 V (battery pack), or 7.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by your nearest Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the cassette. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Precauciones

Operación de la videocámara

- Alimente la videocámara con 6,0 V (batería) o 7,5 V (adaptador de alimentación de CA).
- Para alimentarla con CC o CA, utilice sólo los accesorios recomendados en este manual.
- Si dentro de la videocámara cae algún objeto sólido o líquido, desenchufe la videocámara y haga que sea revisada por su proveedor Sony más cercano antes de reutilizarla.
- Evite tratos bruscos o golpes. Tenga especial cuidado con el objetivo.
- Cuando no vaya a utilizar la videocámara, ponga el selector POWER en OFF.
- No utilice la videocámara envuelta, porque se recalentaría.
- Mantenga la videocámara alejada de campos magnéticos intensos y vibraciones mecánicas.

Cuidado del videocassette

No inserte nada en los pequeños orificios de la parte posterior del videocassette. Estos orificios se utilizan para detectar el tipo de cinta, su grosor, o si la lengüeta está o no deslizada.

Cuidados de la videocámara

- Cuando no vaya a utilizar la videocámara durante mucho tiempo, desconecte la fuente de alimentación y extraiga el videocassette. Conecte periódicamente la alimentación, haga funcionar las secciones de la videocámara y el reproductor, y reproduzca una cinta durante unos 3 minutos.
- Limpie el polvo del objetivo con un cepillo suave. Elimine las huellas dactilares con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o ligeramente humedecido en una solución muy diluida de detergente.
  No emplee ningún tipo de disolvente ya que podría dañar la terminación.

Maintenance Information and Precautions

AC Power Adaptor

Charging

- Use only for the specified battery pack. This unit cannot be used to charge a lithium ion type battery.
- Attach the battery pack firmly.
- Charge the battery pack on a flat surface without vibration.

Others

- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord (mains lead) forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

The warranty that comes with your camcorder does not cover replacement or repair of parts or damage due to use of Ni-MH batteries.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Información sobre el mantenimiento y precauciones

Adaptador de alimentación de CA

Carga

- Empléelo solamente para cargar la batería especificada. Este adaptador no podrá emplearse para cargar una batería de tipo de iones de litio.
- Fije firmemente la batería.
- Cargue la batería sobre una superficie plana sin vibraciones.

Otros

- Cuando no vaya a utilizar la unidad durante mucho tiempo, desenchúfela de la toma de la red. Para desconectar el cable de alimentación (de la red), tire del enchufe. No tire nunca del propio cable.
- No emplee la unidad con el cable dañado, después de haberla dejado caer, o cuando esté dañada.
- No doble a la fuerza el cable de alimentación de CA (red), ni coloque objetos pesados sobre él, ya que podría dañar el cable y provocar incendios o descargas eléctricas.
- Cerciórese de que ningún objeto metálico entre en contacto con las partes metálicas de la placa conectora, ya que se podría producir un cortocircuito que dañaría la unidad.
- Mantenga siempre limpios los contactos metálicos.
- No desarme la unidad.
- No golpee ni deje caer la unidad.
- Cuando esté empleando la unidad, especialmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque perturbaría la recepción de AM y la operación de vídeo.
- La unidad se calentará durante el empleo. Pero esto es normal.
- No coloque la unidad en lugares:
  - Extremadamente cálidos o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Sujetos a vibraciones

La garantía que se suministra con la videocámara no cubre el reemplazo ni las reparaciones de partes o los daños debido al uso de baterías de Ni-MH.

Si surge alguna dificultad, desenchufe la unidad y póngase en contacto con su proveedor Sony.

Using Your Camcorder Abroad

Each country has its own electricity and TV colour systems. Before using your camcorder abroad, check the following points:

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system-based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV or a SECAM system-based TV with PAL-SECAM transcoder. Check the following alphabetical list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, former West Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL M system country
Brazil

PAL N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Utilización de la videocámara en el extranjero

Cada país posee su propio sistema de suministro eléctrico y sistema de televisión en color. Antes de utilizar su videocámara en el extranjero, verifique los puntos siguientes:

Fuentes de alimentación

Usted podrá utilizar su videocámara con el adaptador de alimentación de CA suministrado en cualquier país donde la tensión de la red sea de 110 a 240 V CA, 50/60 Hz.

Diferencia en los sistemas de color

Esta videocámara está basada en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá estar basado en el sistema PAL o el sistema SECAM con transcodificador PAL-SECAM. Compruebe la lista siguiente en orden alfabético.

Países con el sistema PAL
Antigua Alemania Occidental, Australia, Austria, Bélgica, China, Dinamarca, España, Finlandia, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Noruega, Nueva Zelanda, Portugal, Singapur, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL M
Brasil

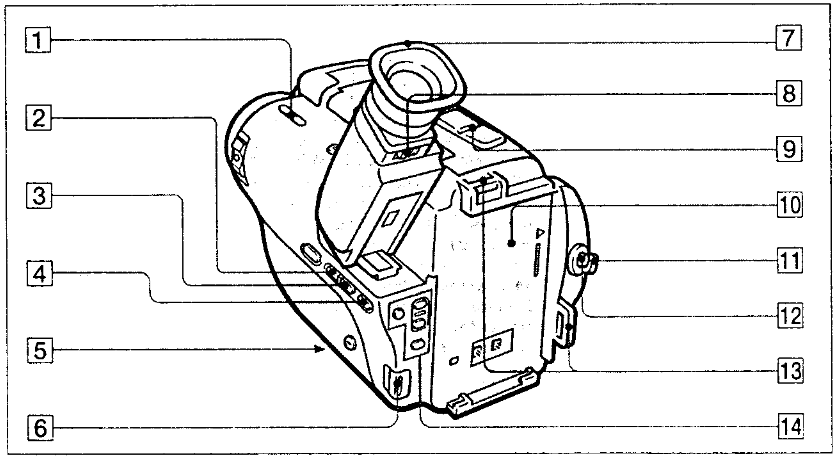
Países con el sistema PAL N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Bolivia, Canadá, Centroamérica, Colombia, Corea, Chile, Ecuador, EE.UU., Filipinas, Islas Bahamas, Jamaica, Japón, México, Perú, Surinam, Taiwan, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, Francia, Guayana, Hungría, Irán, Iraq, Mónaco, Polonia, antigua Unión Soviética, etc.

Identifying the Parts

Identificación de las partes



1 **EDITSEARCH button (p.18)**

2 **DATE button (p.24)**

3 **TIME button (p.24)**

4 **COUNTER RESET button (p.13)**

5 **Tripod receptacle (p.17)**
Attach a tripod (not supplied) here.
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is shorter than 6.5 mm (9/32 inches). Otherwise, the screw might damage the inner part of the camcorder.

6 **BATT (battery) release knob (p.9)**

7 **Eyecup (p.16)**

8 **Viewfinder release knob (p.17, 44)**

9 **Power zoom button (p.15)**

10 **Battery mounting surface (p.9)**

11 **STANDBY switch (p.11, 12)**

12 **START/STOP button (p.12)**

13 **Hooks for shoulder strap (p.59)**

14 **Menu operation buttons (p.29, 35)**

1 **Tecla de búsqueda para edición (EDITSEARCH) (pág.18)**

2 **Tecla de ajuste de la fecha (DATE) (pág.24)**

3 **Tecla de ajuste de la hora (TIME) (pág.24)**

4 **Tecla de puesta a cero del contador (COUNTER RESET) (pág.13)**

5 **Receptáculo para trípode (pág.17)**
Fije un trípode (no suministrado).
Cuando utilice un trípode no fabricado por Sony, asegúrese de que la longitud del tornillo de montaje de la cámara sea inferior a 6,5 mm. De lo contrario, el tornillo puede dañar la parte interna de la videocámara.

6 **Mando de expulsión de la batería (BATT) (pág.9)**

7 **Ocular (pág.16)**

8 **Mando de liberación del visor (pág.17, 44)**

9 **Tecla del zoom motorizado (pág.15)**

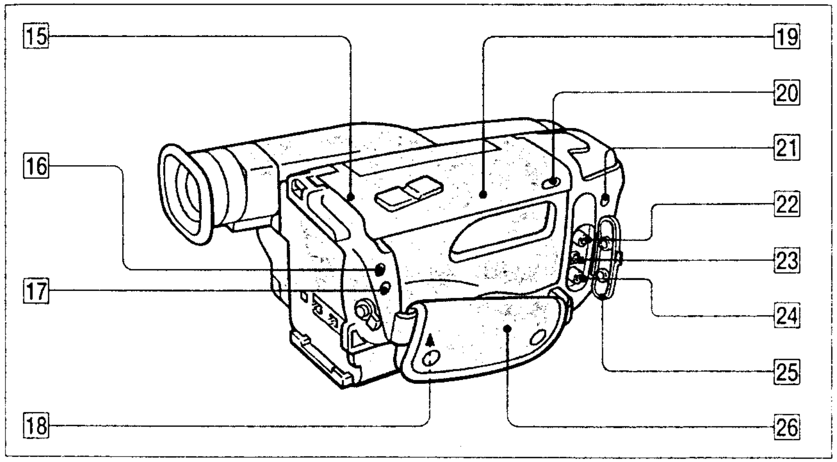
10 **Superficie de montaje de la batería (pág.9)**

11 **Interruptor de espera (STANDBY) (pág.11, 12)**

12 **Tecla de inicio/parada (START/STOP) (pág.12)**

13 **Ganchos para la bandolera (pág.59)**

14 **Teclas de operación del menú (pág.29, 35)**



15 **EJECT button (under the lid) (p.10)**

16 **LANC ⏻ control jack**
Connect the LANC ⏻ connecting cable to a wired remote control unit such as an editing controller. In this case, set the COMMANDER mode to OFF in the menu system (p. 30).
⏻ stands for Local Application Control Bus sytem. The ⏻ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

17 **◎ (earphone) jack (p.18)**

18 **Lithium battery compartment (p.34)**

19 **Cassette compartment lid (p.10)**

20 **Lid lock (p. 10)**

21 **MIC (microphone) jack**

22 **VIDEO jack (p.19)**

23 **RFU DC OUT (RFU adaptor DC out) jack**

24 **AUDIO jack (p.19)**

25 **Jack cover**

26 **Grip strap (p.16)**

15 **Tecla de expulsión del videocassette (EJECT) (debajo de la tapa) (pág.10)**

16 **Toma de control remoto (LANC ⏻)**
Conecte un cable conector LANC ⏻ a una unidad de control remoto alámbrico como un controlador de edición. En este caso, ajuste el modo de COMMANDER a OFF en el sistema del menú (pág. 30)
⏻ significa sistema de control de bus de aplicación local. La toma ⏻ se emplea para controlar el movimiento de la cinta de equipos de vídeo y dispositivos periféricos conectados a la misma. Esta toma posee la misma función que los conectores indicados como CONTROL L o REMOTE.

17 **Toma para auricular (◎) (pág.18)**

18 **Compartimiento de la pila de litio (pág.34)**

19 **Tapa del compartimiento del videocassette (pág.10)**

20 **Seguro de la tapa (pág.10)**

21 **Toma para micrófono (MIC)**

22 **Toma de video (VIDEO) (pág.19)**

23 **Toma de salida de CC para el adaptador de RFU (RFU DC OUT)**

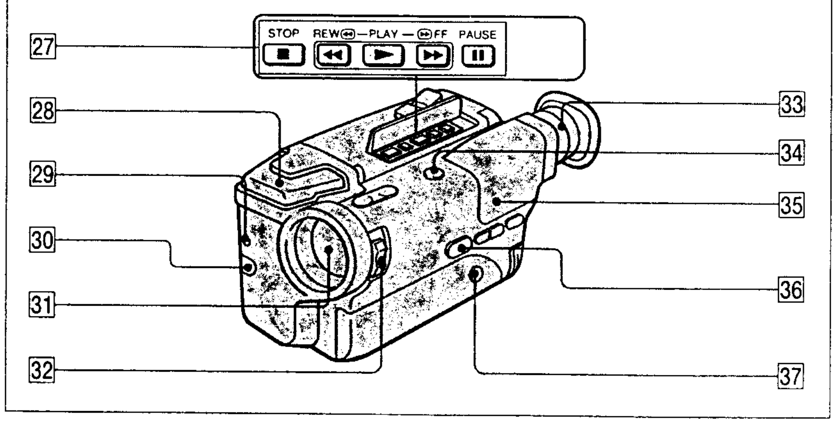
24 **Toma de audio (AUDIO) (pag.19)**

25 **Cubierta de tomas**

26 **Correa de la empuñadura (pág.16)**

Identirying the Parts

Identificación de las partes



27 **Tape transport buttons (p.20, 21)**
- ■ STOP
- ◀◀ REW (rewind)
- ▶ PLAY (playback)
- ▶▶ FF (fast forward)
- ❚❚ PAUSE

These buttons will function in PLAYER mode.

28 **Built-in microphone**

29 **Camera recording/battery lamp**

30 **Remote sensor (p.61)**

31 **Lens cover**

32 **POWER switch (p.11, 12, 20)**

33 **Viewfinder adjustment ring (p.11)**

34 **FADER button (p.25)**

35 **Viewfinder (p.11, 17, 62)**

36 **PROGRAM AE button (p.27)**

37 **BACK LIGHT button (p.28)**

27 **Teclas de transporte de la cinta (pág.20, 21)**
- ■ STOP(parada)
- ◀◀ REW (rebobinado)
- ▶ PLAY (reproducción)
- ▶▶ FF (avance rápido)
- ❚❚ PAUSE (pausa)

Estas teclas funcionarán el modo PLAYER.

28 **Micrófono incorporado**

29 **Lámpara indicadora de videofilmación/estado de la batería**

30 **Sensor remoto (pág.61)**

31 **Cubierta del objetivo**

32 **Selector de alimentación (POWER) (pág.11, 12, 20)**

33 **Anillo de ajuste de la lente del visor (pág.11)**

34 **Tecla de aumento gradual/desvanecimiento (FADER) (pág.25)**

35 **Visor (pág.11, 17, 62)**

36 **Tecla de exposición automática programada (PROGRAM AE) (pág.27)**

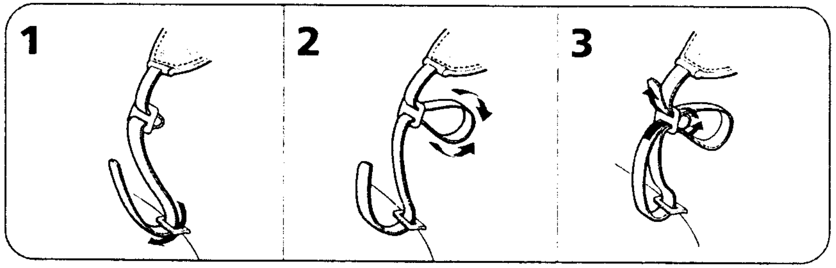
37 **Tecla de videofilmación a contraluz (BACK LIGHT) (pág.28)**

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (13 on page 56).

Fijación de la bandolera

Fije la bandolera suministrada a los ganchos para la misma (13 de la página 56).

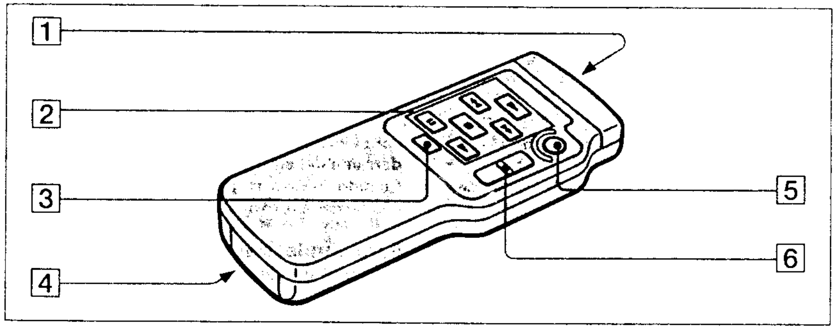


Remote Commander

The buttons that have the same name on the Remote Commander and on the camcorder function identically.

Telemando

Las teclas del telemando con el mismo nombre que las de la videocámara poseen idéntica función.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Tape transport buttons (p.20, 21)**

3 **DISPLAY button (p.21)**

4 **R6 (size AA) battery holder**

5 **START/STOP button**

6 **Power zoom button**
The zooming speed is unchangeable on the Remote Commander.

1 **Transmisor**
Para controlar la videocámara con el telemando, active el selector POWER de la videocámara y apunte este transmisor hacia el sensor remoto.

2 **Teclas de transporte de la cinta (pág.20, 21)**

3 **Tecla de visualización (DISPLAY) (pág.21)**

4 **Compartimiento de las pilas R6 (tamaño AA)**

5 **Tecla de inicio/parada (START/STOP)**

6 **Tecla del zoom motorizado**
La velocidad del zoom no podrá cambiarse en el telemando.

Preparing the Remote Commander

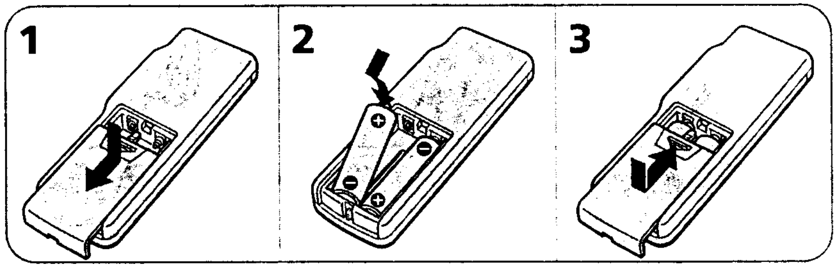
To use the Remote Commander, you must insert two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.

(1) Remove the battery cover from the Remote Commander. **(2)** Insert both of the R6 (size AA) batteries with correct polarity. **(3)** Put the battery cover back onto the Remote Commander.

Preparación del telemando

Para utilizar el telemando, deberá colocar dos pilas R6 (tamaño AA). Utilice las pilas R6 (tamaño AA) suministradas.

(1) Quite la tapa del compartimiento de las pilas en el telemando. **(2)** Inserte las dos pilas R6 (tamaño AA) con la polaridad correcta. **(3)** Cierre la tapa.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system (p. 30).

Nota sobre la duración de las pilas

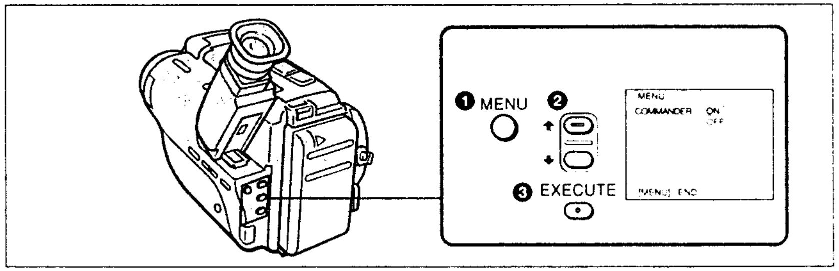
Las pilas en el telemando durarán unos 6 meses en condiciones normales de funcionamiento. Cuando las pilas se debiliten o agoten, el telemando no funcionará.

Para evitar el daño que podría causar el derrame del electrólito de las pilas

Cuando no vaya a utilizar el telemando durante mucho tiempo, extraiga las pilas.

Para emplear el telemando

Cerciórese de ajustar el modo de COMMANDER a ON en el sistema del menú (pág. 30).

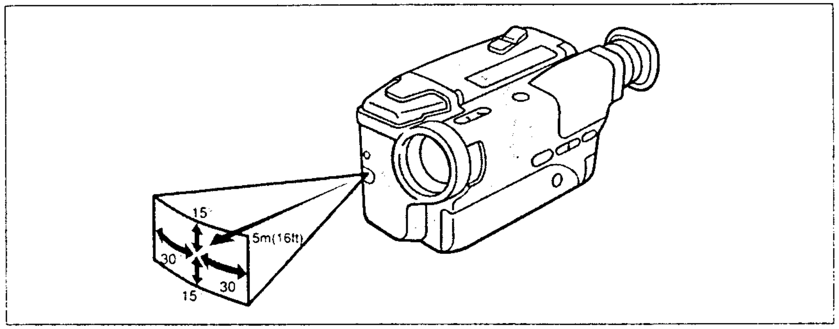


Remote Control Direction

Aim the Remote Commander to the remote sensor within the range as shown below.

Área controlable mediante el telemando

Apunte con el telemando hacia el sensor remoto dentro de la gama que se muestra en la ilustración.



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2, and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Notas sobre el telemando

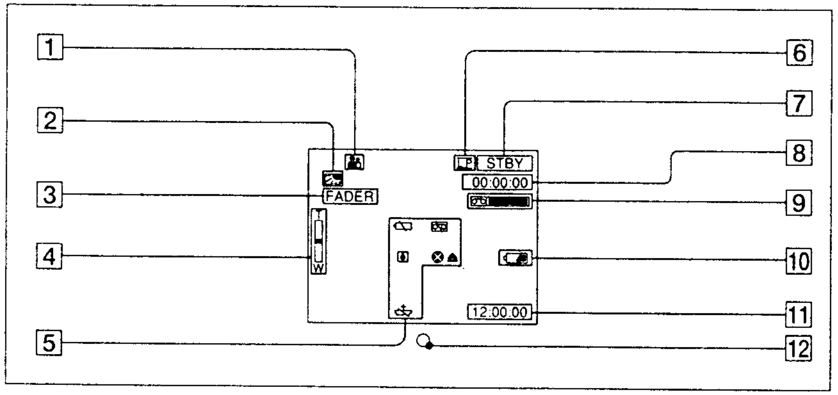
- Mantenga el sensor remoto alejado de luces intensas, como la directa del sol u otras de iluminación intensa. De lo contrario, el telemando no funcionará adecuadamente.
- Asegúrese de que no haya ningún obstáculo entre el telemando y el sensor remoto.
- Esta videocámara funciona con señales del modo de mando VTR 2. El modo de mando (1, 2 y 3) se utiliza para distinguir esta videocámara de otras videograbadoras Sony para evitar una operación errónea. Si utiliza otra videograbadora Sony en el modo de mando VTR 2, se recomienda cambiarlo o cubrir el sensor remoto de la videograbadora con un papel negro.

Identifying the Parts

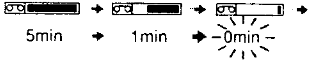
Identificación de las partes

In the Viewfinder

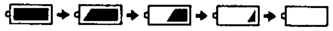
En el visor



1. PROGRAM AE mode indicator (p.27)
2. Back light indicator (p. 28)
3. Fade indicator (p. 25)
4. Power zoom indicator (p. 15)
5. Warning indicator (p. 63)
6. Lights up when playing back a tape recorded in LP mode (p. 36)
7. Tape transport mode (p. 12)
8. Tape counter (p. 13)
9. Remaining tape indicator (p. 13)

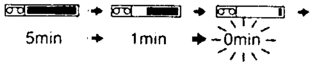


10. Remaining battery indicator (p. 38)

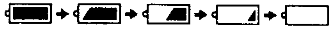


11. Date or Time (p.24)
12. Recording lamp/battery lamp (p.12)

1. ndicador de modo de PROGRAM AE (pág. 27)
2. Indicador de videofilmación a contraluz (pág. 28)
3. Indicador de aumento gradual/ desvanecimiento (pág. 25)
4. Indicador del zoom motorizado (pág. 15)
5. Indicador de advertencia (pág. 63)
6. Se encenderá cuando reproduzca una cinta grabada en el modo LP (pág. 36)
7. Modo de transporte de la cinta (pág. 12)
8. Contador de la cinta (pág. 13)
9. Indicador de duración restante de la cinta (pág. 13)



10. Indicador de carga restante de la batería (pág. 38)



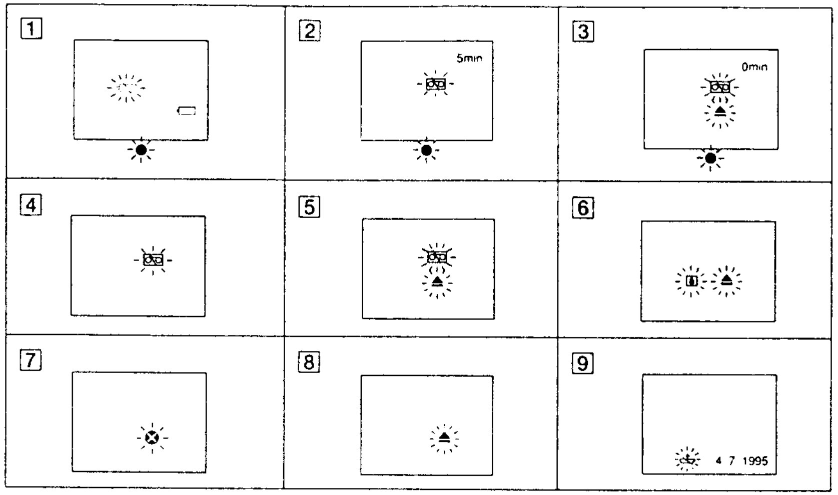
11. Fecha u hora (pág. 24)
12. Lámpara indicadora de videofilmación/ estado de la batería (pág. 12)

Warning Indicators

Indicadores de advertencia

If indicators flash in the viewfinder, or a caution lamp on the camcorder flashes, check the following:

Si parpadean indicadores en el visor, o una lámpara de precaución en la videocámara, verifique los puntos siguientes:

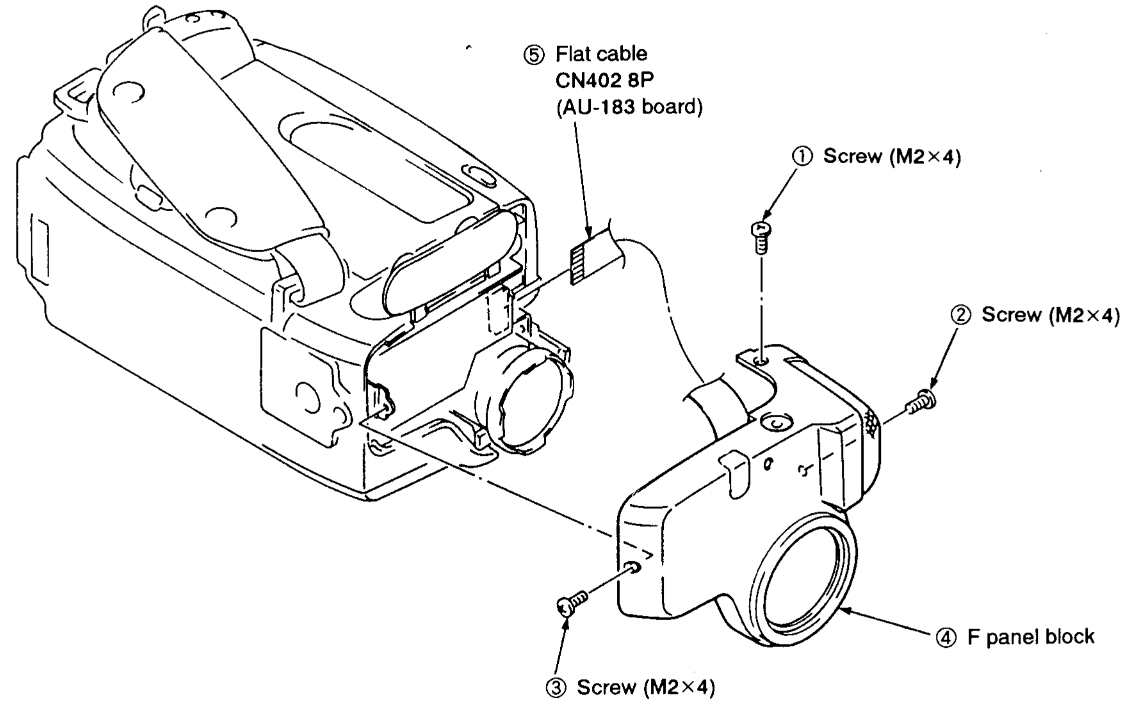


1. Battery Remaining
   Slow flashing: The battery is weak.
   Fast flashing: The battery is dead.
2. The tape is near the end.
3. The tape has run out.
4. No tape has been inserted.
5. The tab on the tape is out (red) (p.10).
6. Moisture condensation has occurred (p.42).
7. The video heads may be contaminated (p.44).
8. Some other trouble has occurred.
   Disconnect the power source and contact your Sony dealer or local authorized facility.
9. The lithium battery is weak or the lithium battery is not installed (p. 33).

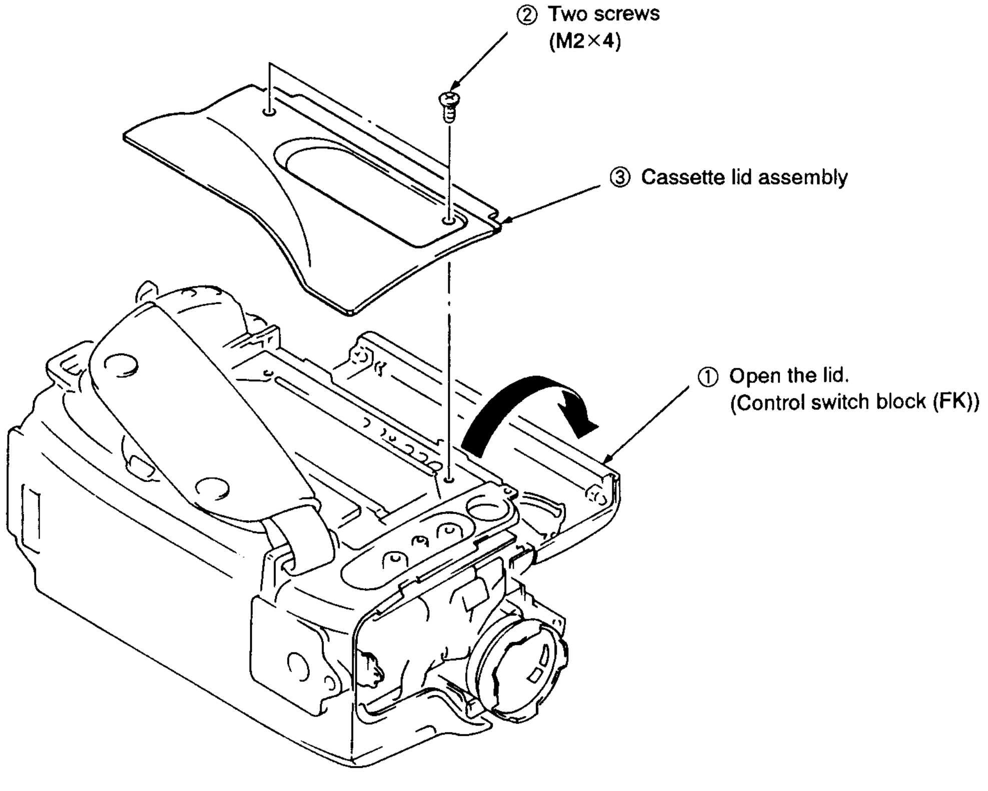
1. Carga restante de la batería
   Parpadeo lento: La batería está débil.
   Parpadeo rápido: La batería está agotada.
2. La cinta está a punto de finalizar.
3. La cinta ha finalizado.
4. No hay videocassette insertado.
5. La lengüeta del videocassette está al descubierto (roja) (pág.10).
6. Se ha producido condensación de humedad (pág.42).
7. Las cabezas de vídeo pueden estar contaminadas (pág.44).
8. Se ha producido algún otro problema.
   Desconecte la fuente de alimentación y póngase en contacto con su proveedor Sony o una estación de servicio autorizada local.
9. La pila de litio está débil, o no está colocada (pág. 33).

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF F PANEL BLOCK

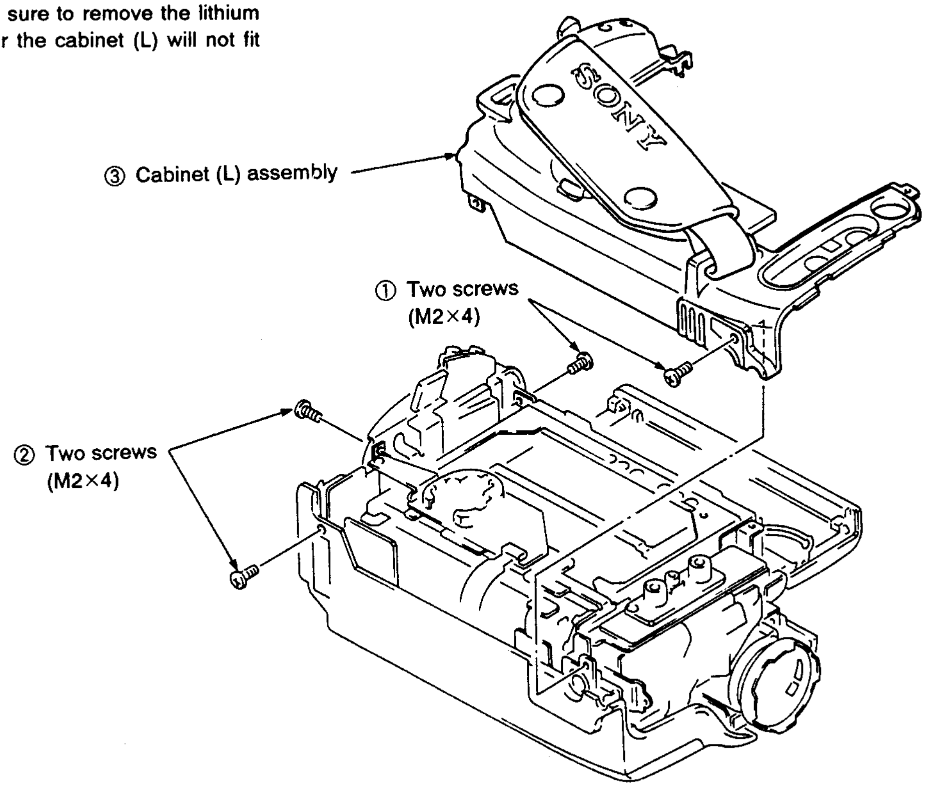

⑤ Flat cable
CN402 8P
(AU-183 board)
① Screw (M2×4)
② Screw (M2×4)
④ F panel block
③ Screw (M2×4)

2-2. REMOVAL OF CASSETTE LID ASSEMBLY


② Two screws
(M2×4)
③ Cassette lid assembly
① Open the lid.
(Control switch block (FK))

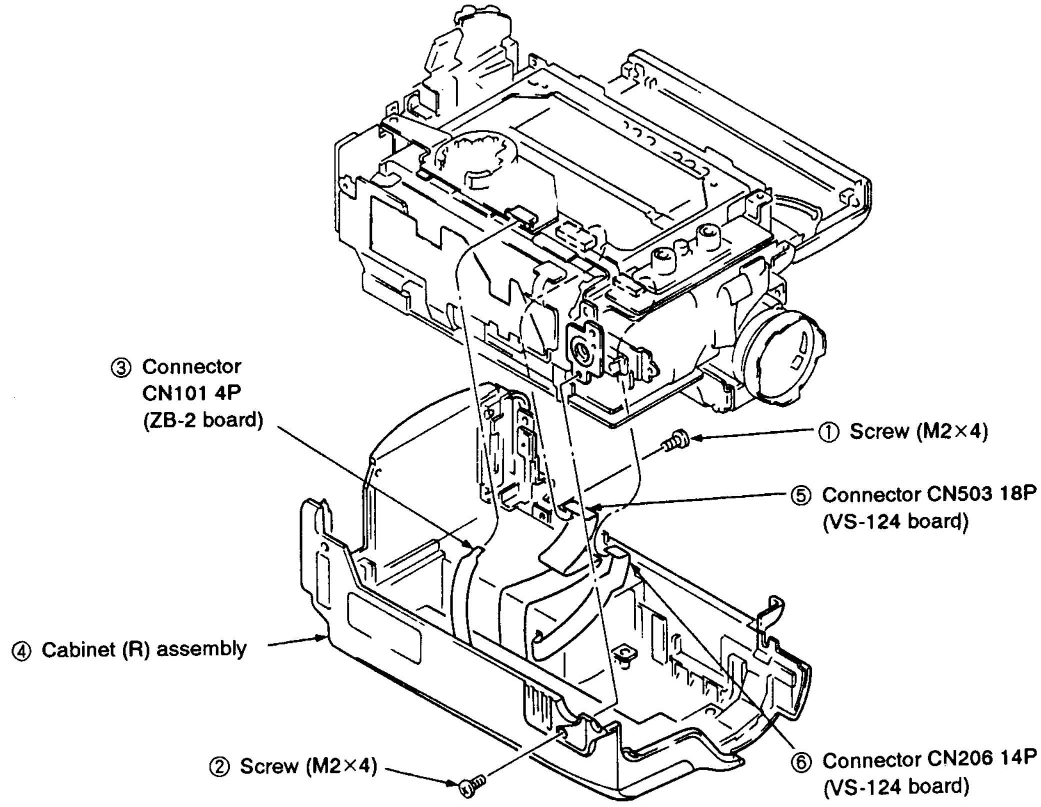
2-3. REMOVAL OF CABINET (L) ASSEMBLY

Note: When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.



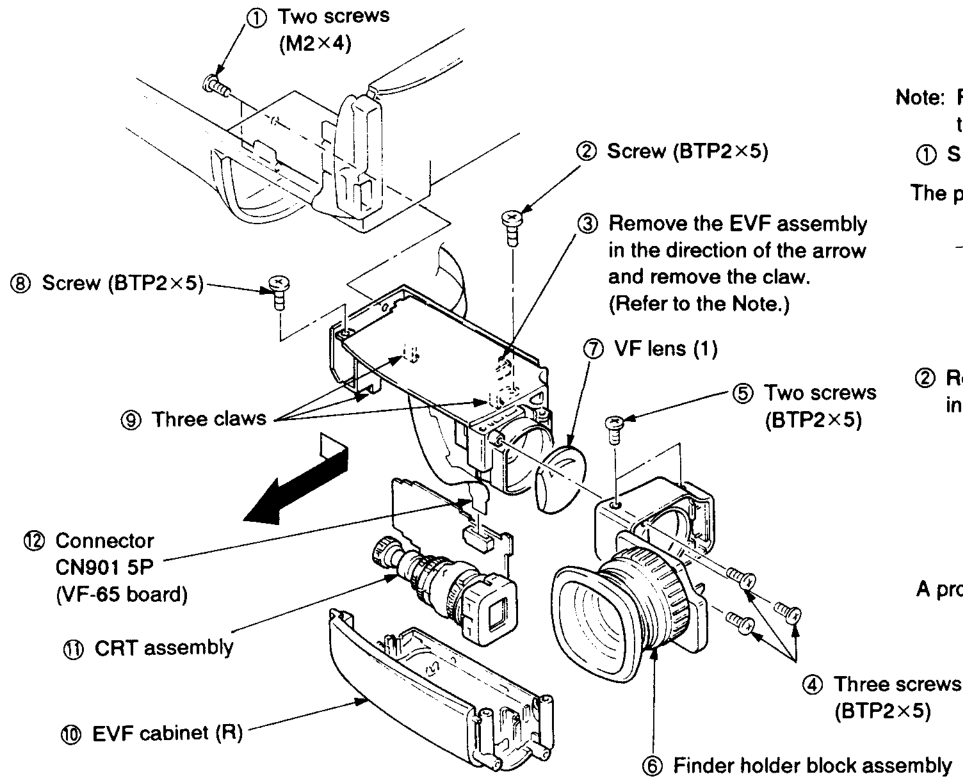
③ Cabinet (L) assembly
SONY
① Two screws (M2×4)
② Two screws (M2×4)

2-4. REMOVAL OF CABINET (R) ASSEMBLY



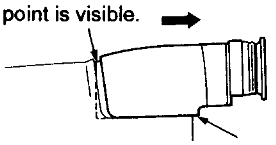
③ Connector CN101 4P (ZB-2 board)
① Screw (M2×4)
⑤ Connector CN503 18P (VS-124 board)
④ Cabinet (R) assembly
② Screw (M2×4)
⑥ Connector CN206 14P (VS-124 board)

2-5. REMOVAL OF EVF ASSEMBLY

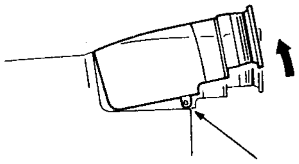

① Two screws (M2×4)
② Screw (BTP2×5)
③ Remove the EVF assembly in the direction of the arrow and remove the claw. (Refer to the Note.)
⑧ Screw (BTP2×5)
⑦ VF lens (1)
⑤ Two screws (BTP2×5)
⑨ Three claws
⑫ Connector CN901 5P (VF-65 board)
⑪ CRT assembly
⑩ EVF cabinet (R)
④ Three screws (BTP2×5)
⑥ Finder holder block assembly

Note: Remove the EVF assembly not to harm the cabinet (R) as in the figure.

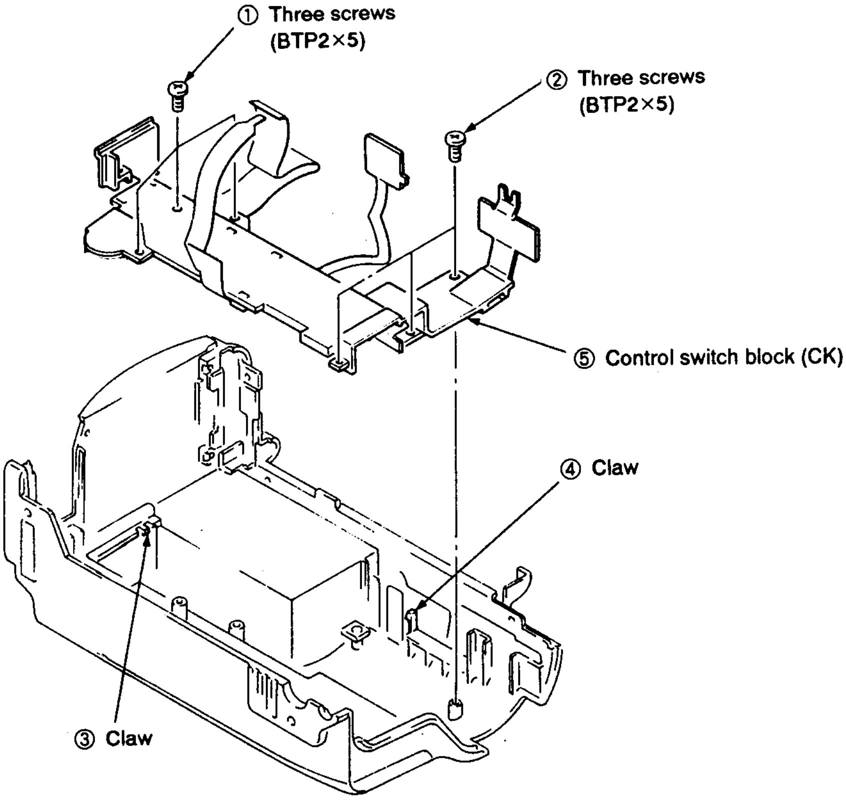
① Slide the EVF assembly.


The point is visible.
A difference in level is formed.

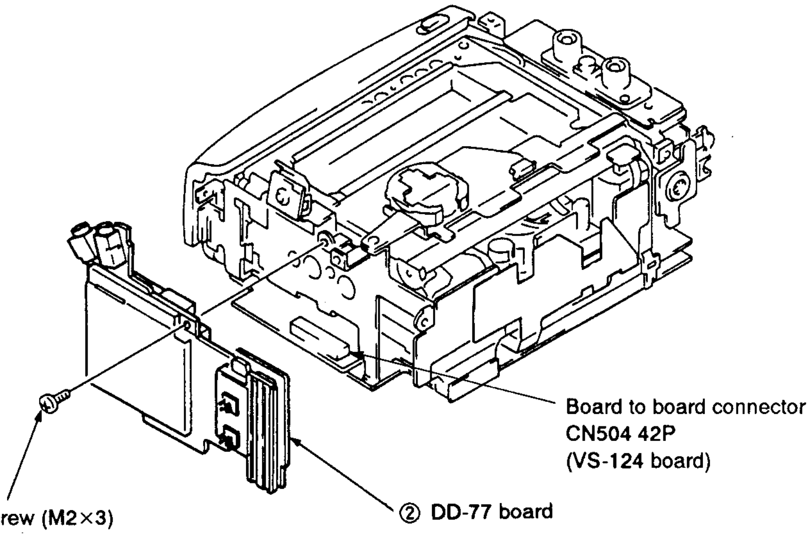
② Remove the EVF assembly in the arrow direction.


A projection of a screw clamp is come out.

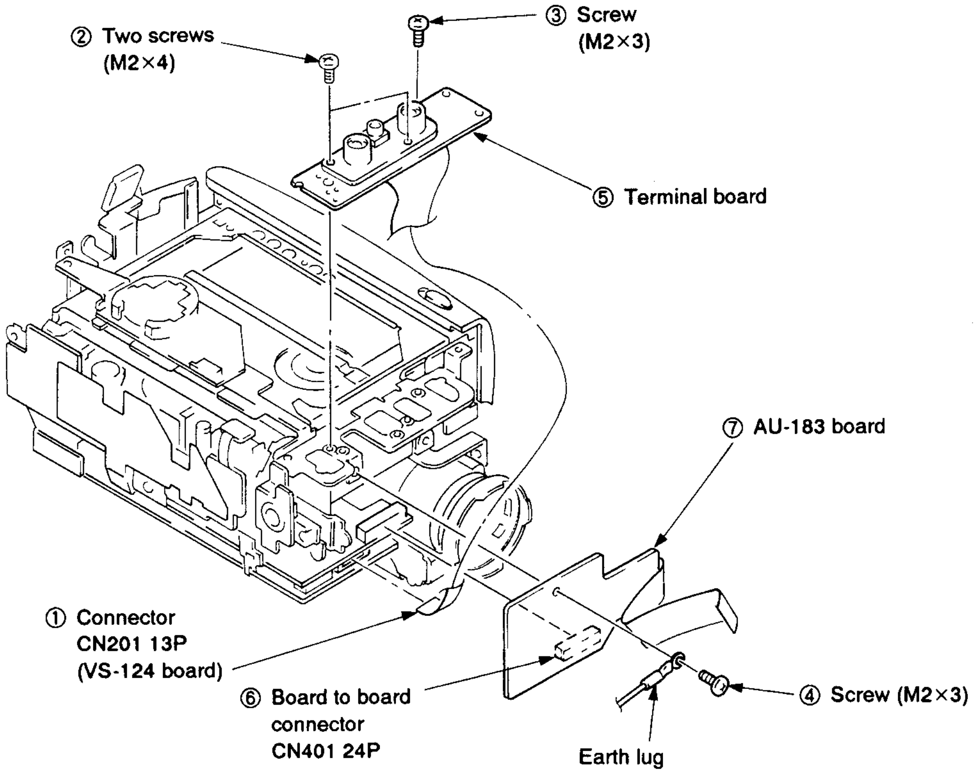
2-6. REMOVAL OF CONTROL SWITCH BLOCK (CK)


① Three screws (BTP2×5)
② Three screws (BTP2×5)
⑤ Control switch block (CK)
④ Claw
③ Claw

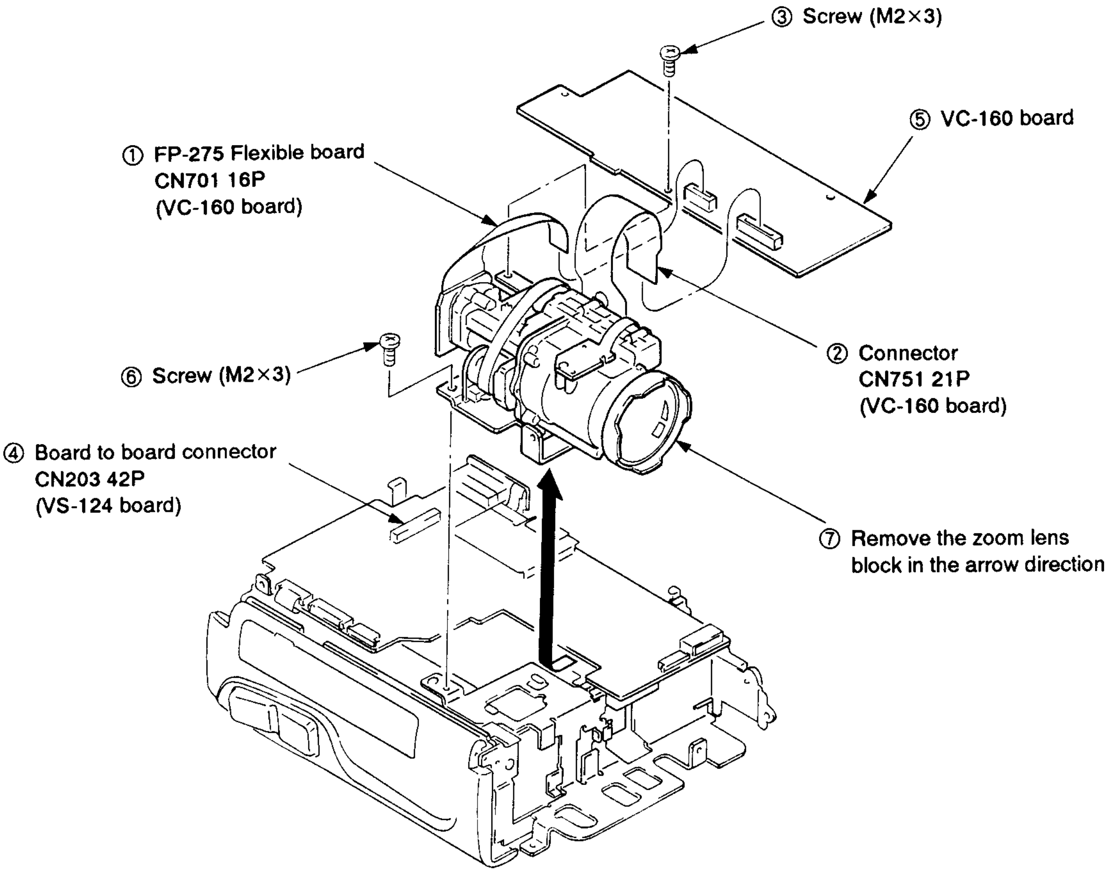
2-7. REMOVAL OF DD-77 BOARD


Board to board connector
CN504 42P
(VS-124 board)
① Screw (M2×3)
② DD-77 board

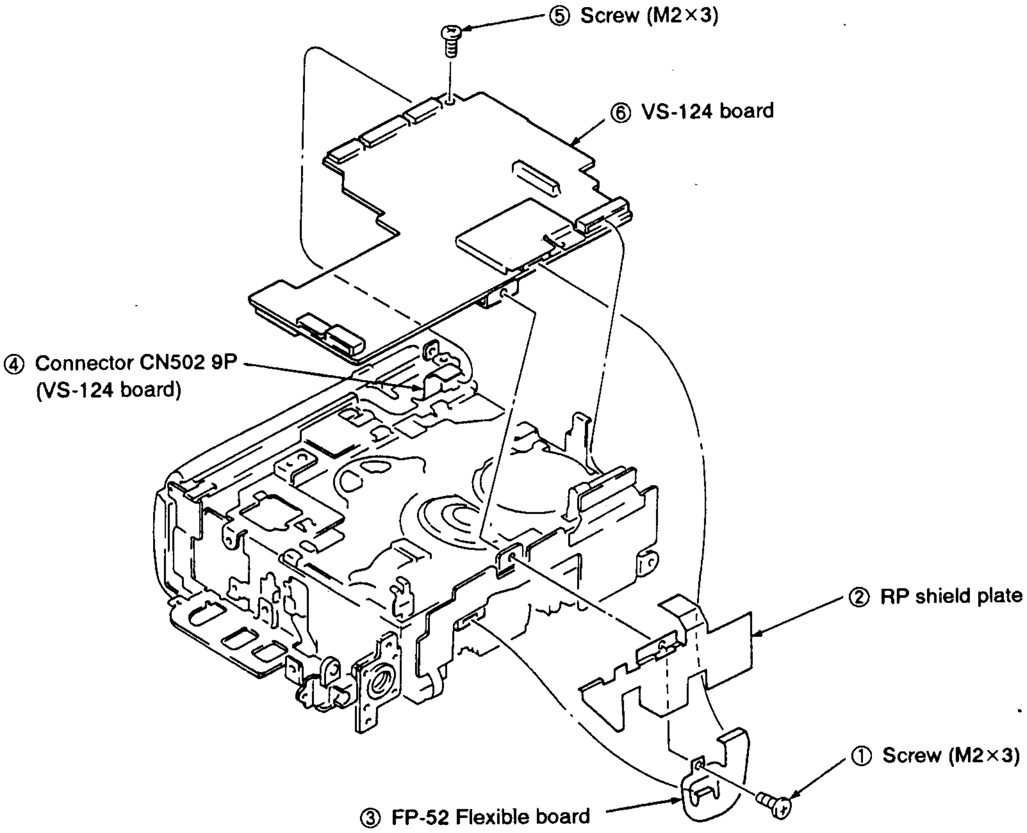
2-8. REMOVAL OF TERMINAL BOARD AND AU-183 BOARD


② Two screws
(M2×4)
③ Screw
(M2×3)
⑤ Terminal board
⑦ AU-183 board
① Connector
CN201 13P
(VS-124 board)
⑥ Board to board
connector
CN401 24P
④ Screw (M2×3)
Earth lug

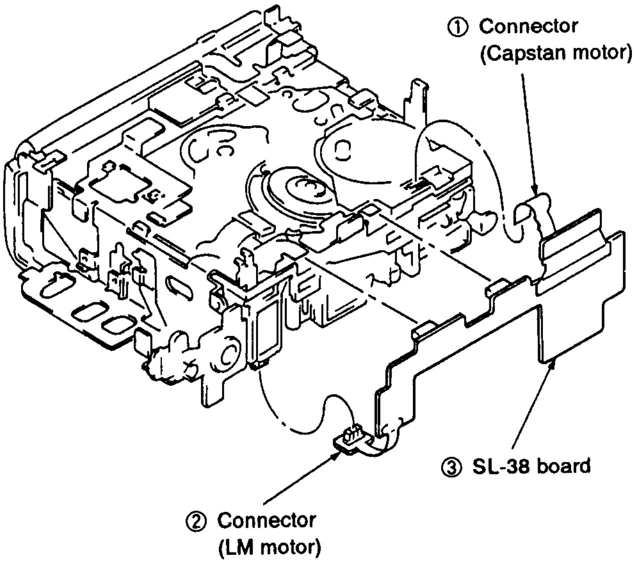
2-9. REMOVAL OF ZOOM LENS BLOCK AND VC-160 BOARD


③ Screw (M2×3)
⑤ VC-160 board
① FP-275 Flexible board
CN701 16P
(VC-160 board)
⑥ Screw (M2×3)
② Connector
CN751 21P
(VC-160 board)
④ Board to board connector
CN203 42P
(VS-124 board)
⑦ Remove the zoom lens
block in the arrow direction

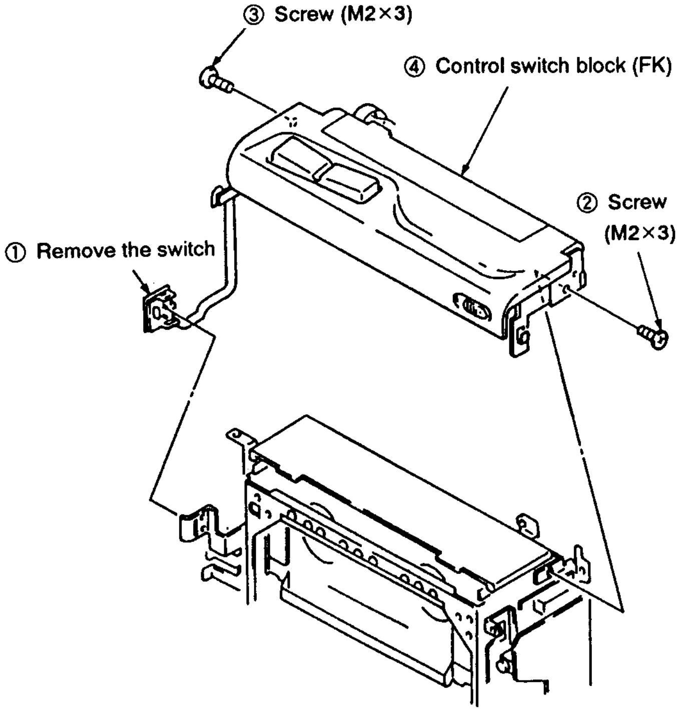
2-10. REMOVAL OF VS-124 BOARD


⑤ Screw (M2×3)
⑥ VS-124 board
④ Connector CN502 9P
(VS-124 board)
② RP shield plate
① Screw (M2×3)
③ FP-52 Flexible board

2-11. REMOVAL OF SL-38 BOARD

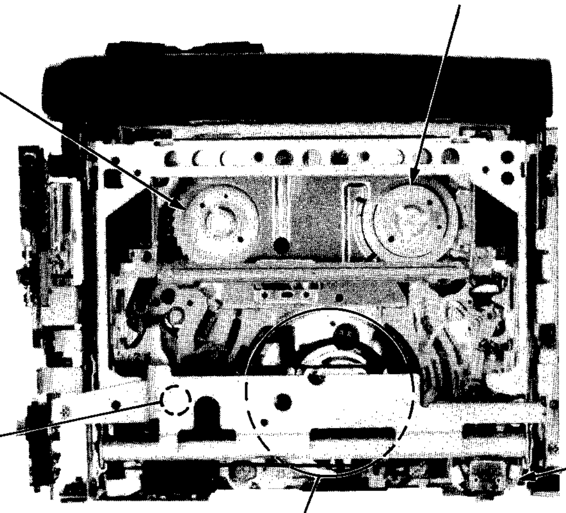

① Connector
(Capstan motor)
③ SL-38 board
② Connector
(LM motor)

2-12. REMOVE OF CONTROL SWITCH BLOCK (FK)


③ Screw (M2×3)
④ Control switch block (FK)
② Screw
(M2×3)
① Remove the switch

2-13. INTERNAL VIEWS

— Left side —



S reel table assembly
X-3944-116-1

T reel table assembly
X-3941-274-1

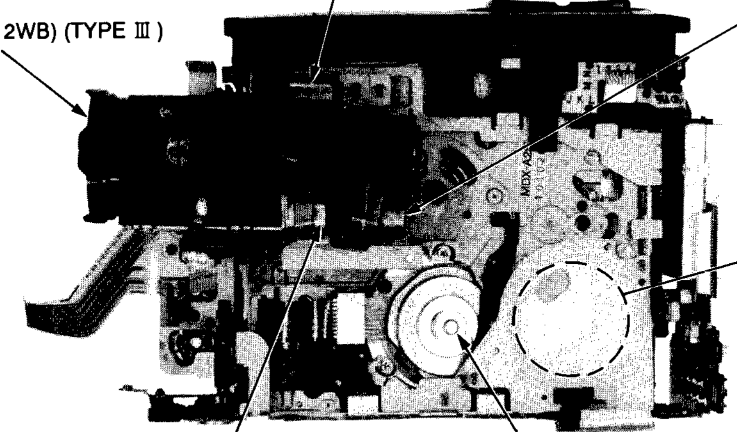
M902
Capstan motor
(SCE-0101A)
8-835-477-12

M903
Loading motor assembly
A-7040-304-A

M901

Drum assembly	DGH-90A-R	A-7048-585-A
Upper drum assembly	DGR-90-R	A-7049-521-A

— Right side —



M907 (TYPE Ⅱ)
IG meter (IRIS)
3-708-888-01
M910 (TYPE Ⅲ)
IRIS assembly
3-708-898-01

Device lens (LSV-140A) (TYPE Ⅰ)
8-848-704-01
Zoom lens (VCL-5412WA) (TYPE Ⅱ)
1-547-716-11
Zoom lens (VCL-5412WB) (TYPE Ⅲ)
1-547-739-11

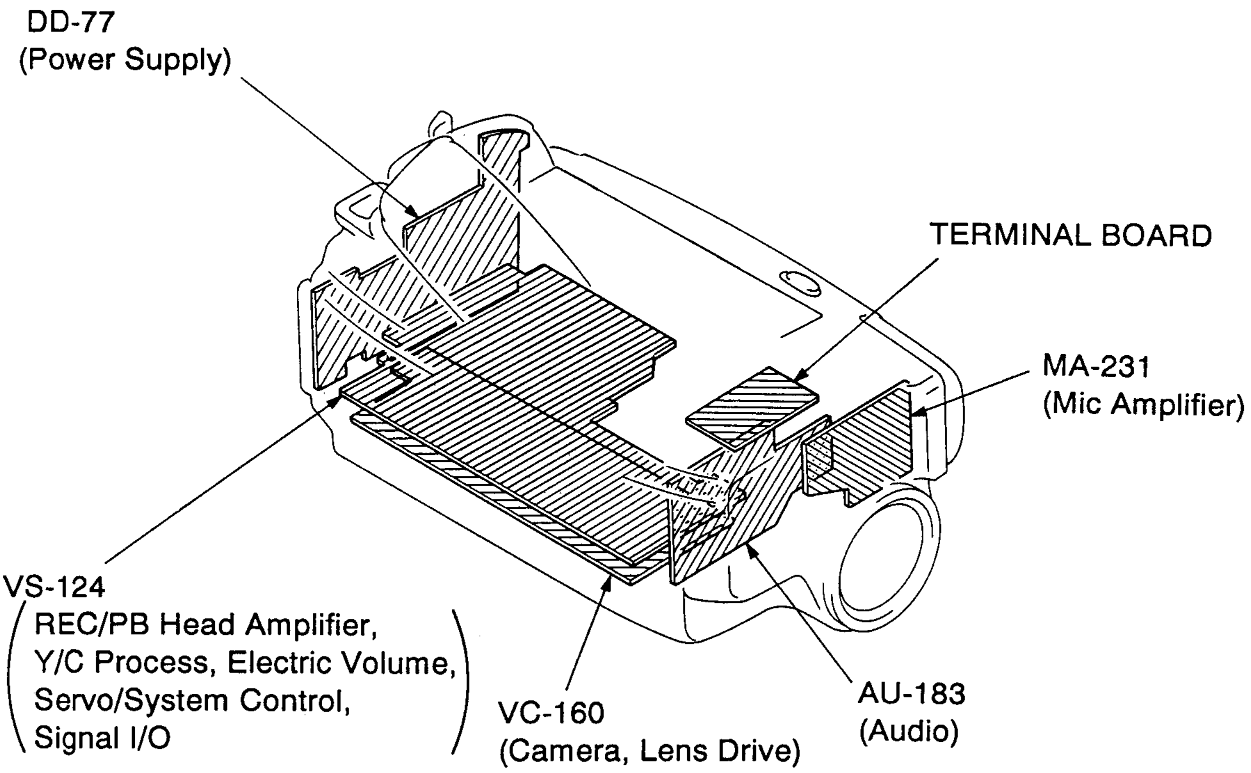
M905 (TYPE Ⅰ)
Focus motor assembly
1-698-364-01
M908 (TYPE Ⅱ)
Focus motor assembly
3-708-889-01
M911 (TYPE Ⅲ)
Focus motor assembly
3-708-897-01

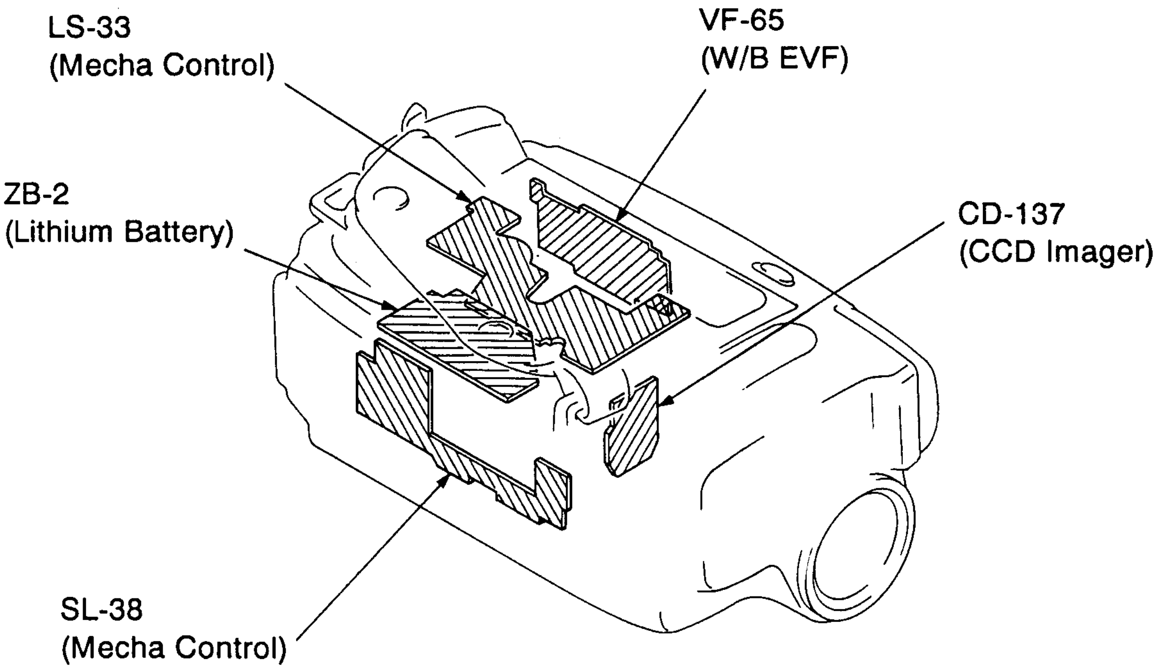
M902
Capstan motor (SCE-0101A)
8-835-477-12

M906 (TYPE Ⅰ)
Zoom motor assembly
1-698-363-01
M909 (TYPE Ⅱ)
Zoom motor assembly
3-708-887-01
M912 (TYPE Ⅲ)
Zoom motor assembly
3-708-896-01

M901
Drum assembly

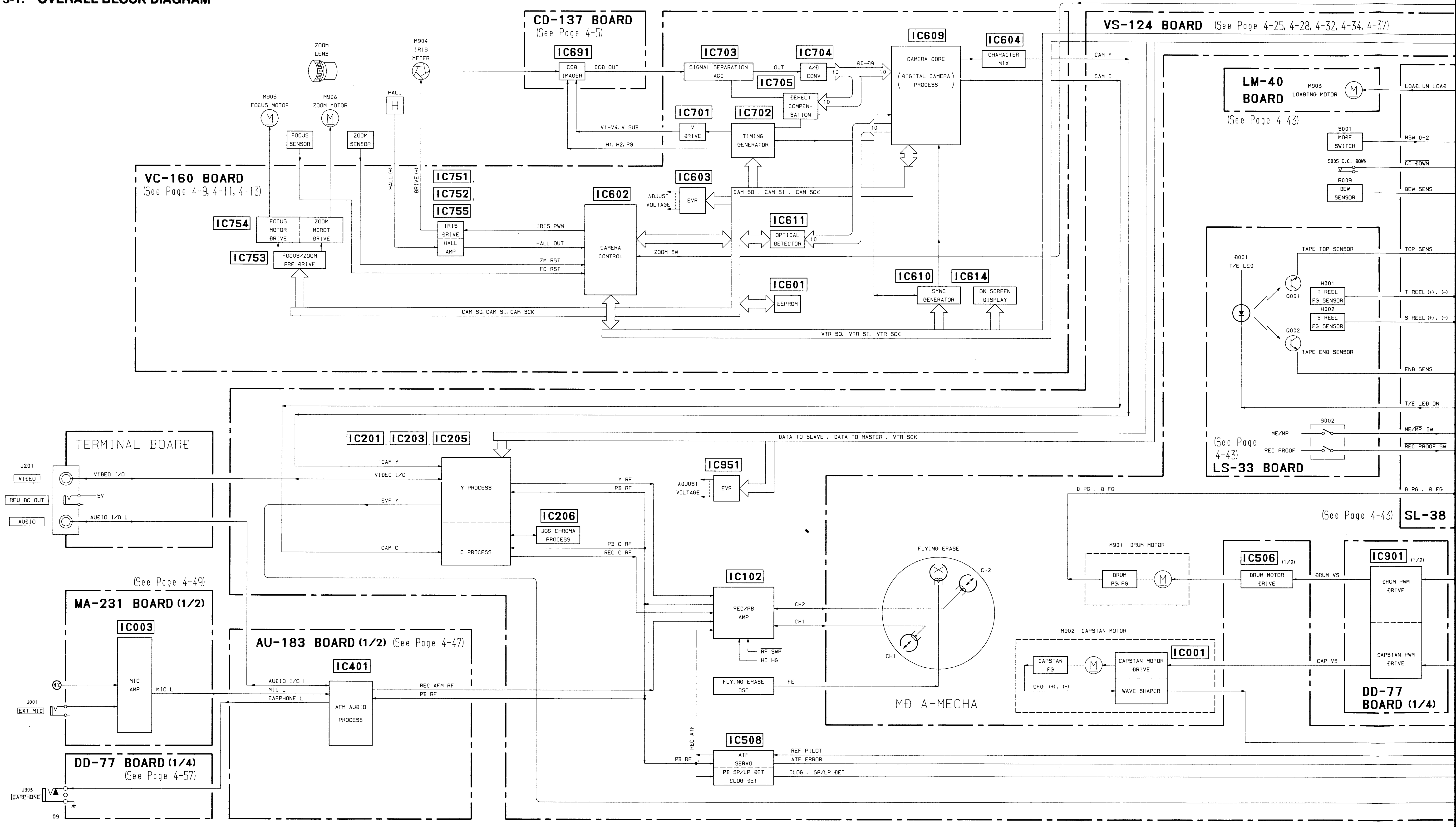
2-14. CIRCUIT BOARDS LOCATION

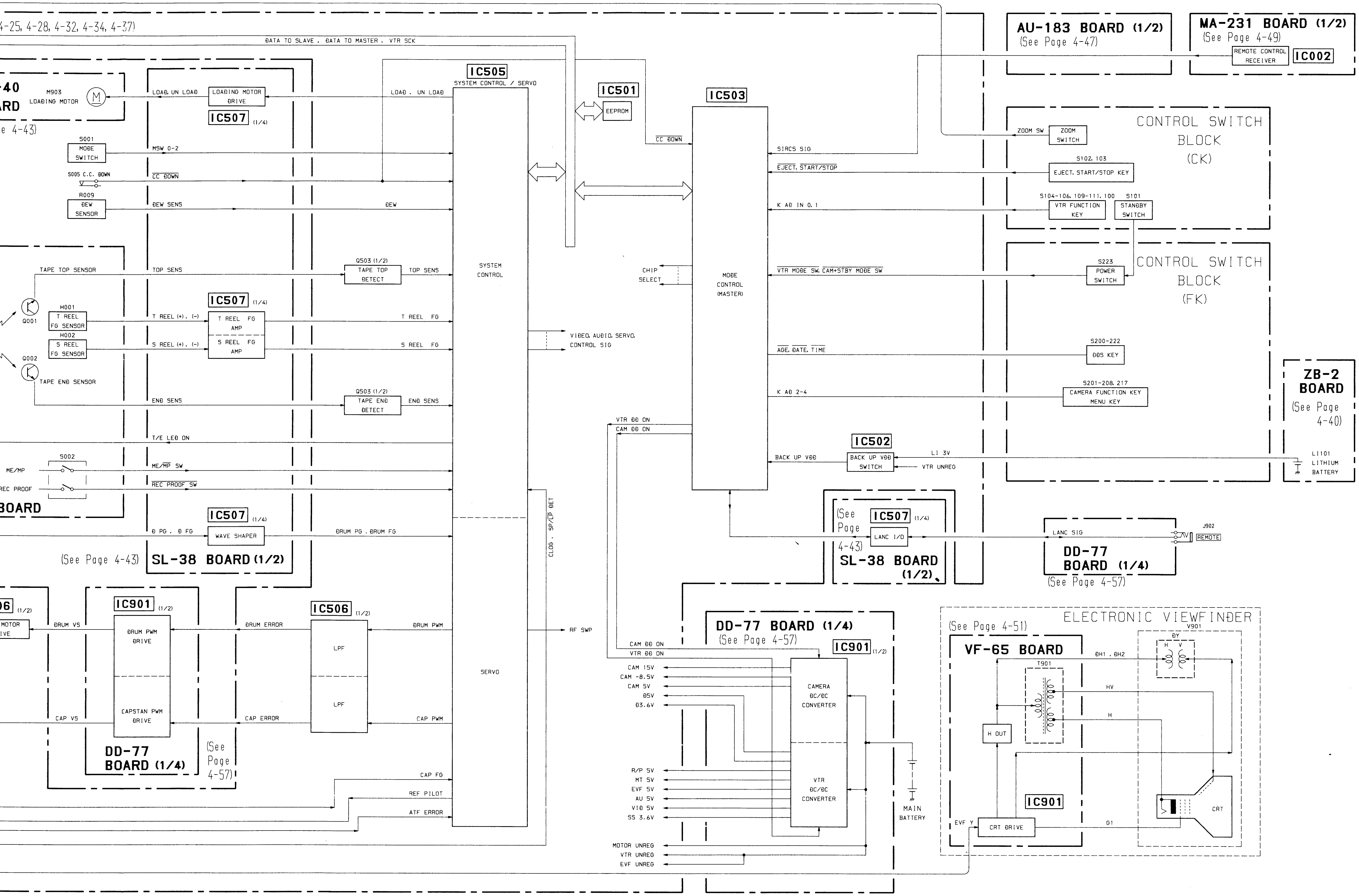

DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)


LS-33
(Mecha Control)
VF-65
(W/B EVF)
ZB-2
(Lithium Battery)
CD-137
(CCD Imager)
SL-38
(Mecha Control)

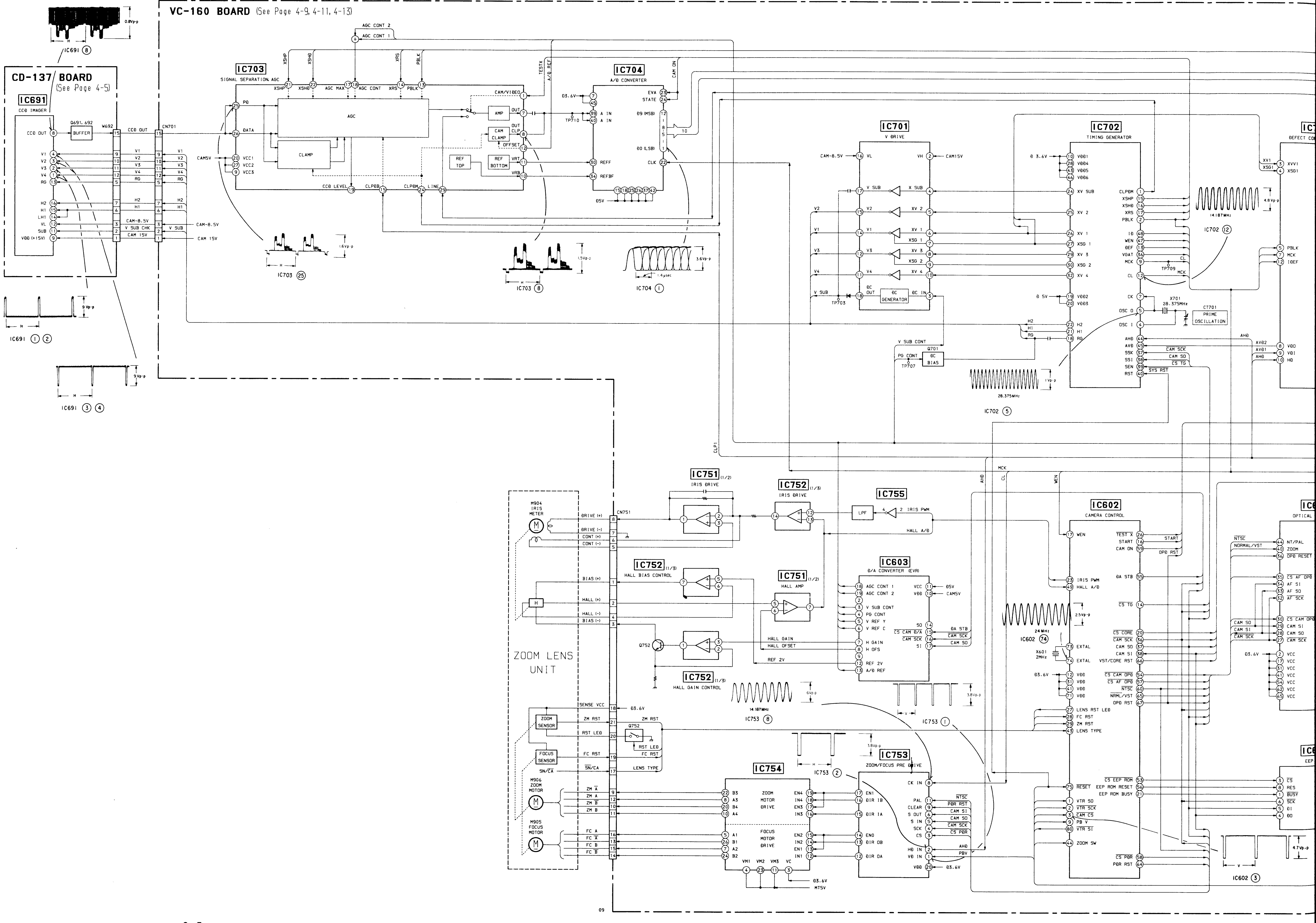
SECTION 3
BLOCK DIAGRAM

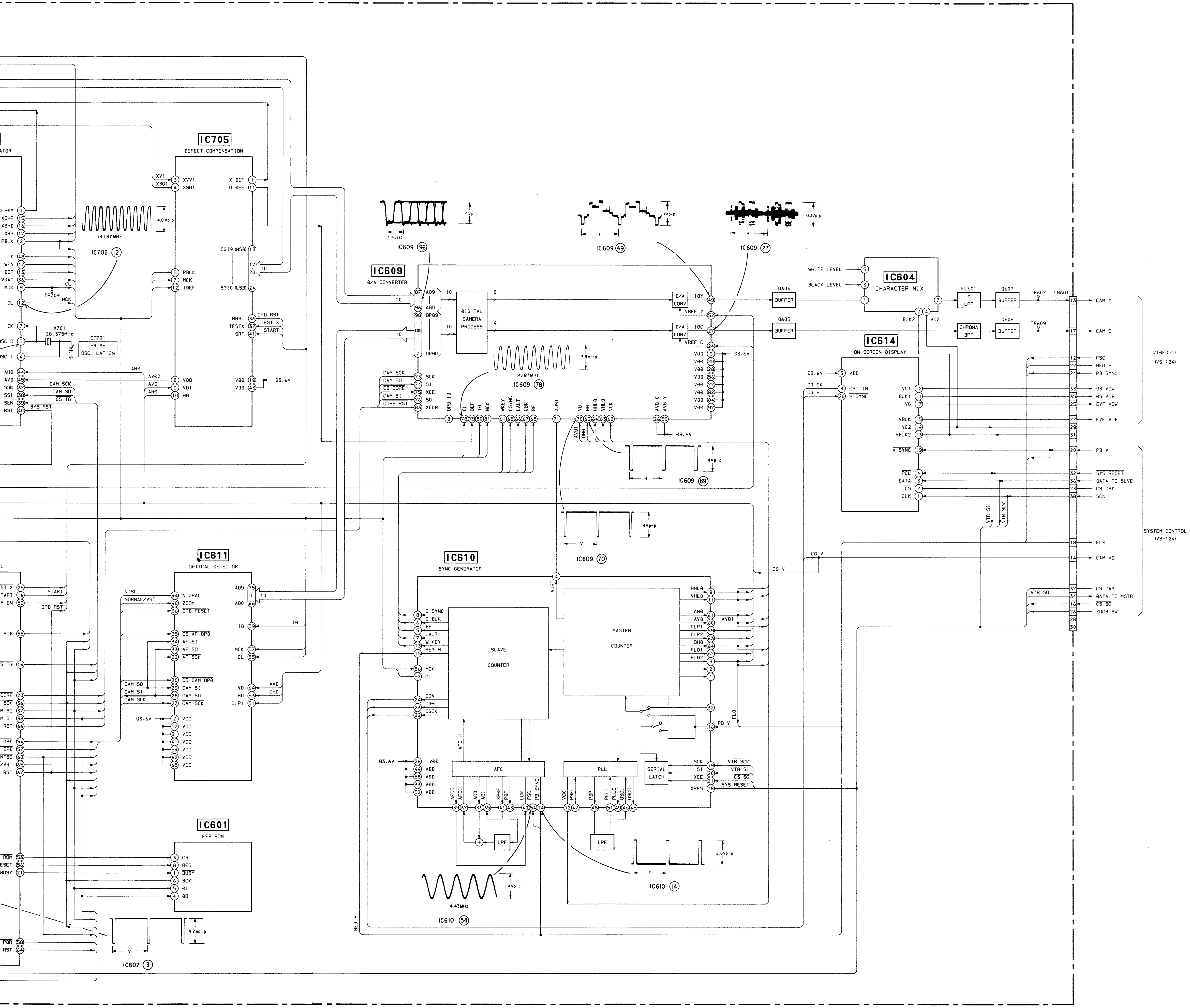
3-1. OVERALL BLOCK DIAGRAM


CD-137 BOARD
(See Page 4-5)
IC691
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
M905 FOCUS MOTOR
M906 ZOOM MOTOR
HALL
H
FOCUS SENSOR
ZOOM SENSOR
IC703
SIGNAL SEPARATION AGC
OUT
IC704
A/D CONV
D0-D9
10
IC705
DEFECT COMPEN-SATION
IC609
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC604
CHARACTER MIX
IC701
V DRIVE
IC702
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
VC-160 BOARD
(See Page 4-9, 4-11, 4-13)
IC751,
IC752,
IC755
IRIS DRIVE
HALL AMP
HALL (+)
DRIVE (+)
IC754
FOCUS MOTOR DRIVE
ZOOM MOROT DRIVE
IC753
FOCUS/ZOOM PRE DRIVE
IC602
CAMERA CONTROL
IRIS PWM
HALL OUT
ZM RST
FC RST
ZOOM SW
IC603
EVR
ADJUST VOLTAGE
CAM SO, CAM SI, CAM SCK
IC611
OPTICAL DETECTOR
IC601
EEPROM
IC610
SYNC GENERATOR
IC614
ON SCREEN DISPLAY
CAM SO, CAM SI, CAM SCK
VTR SO, VTR SI, VTR SCK
VS-124 BOARD (See Page 4-25, 4-28, 4-32, 4-34, 4-37)
CAM Y
CAM C
LM-40 BOARD
M903 LOADING MOTOR
M
(See Page 4-43)
LOAD, UN LOAD
S001 MODE SWITCH
MSW 0-2
S005 C.C. DOWN
CC DOWN
R009 DEW SENSOR
DEW SENS
D001 T/E LED
TAPE TOP SENSOR
TOP SENS
Q001
H001 T REEL FG SENSOR
T REEL (+), (-)
H002 S REEL FG SENSOR
S REEL (+), (-)
Q002
TAPE END SENSOR
END SENS
T/E LED ON
S002
ME/MP
REC PROOF
ME/MP SW
REC PROOF SW
(See Page 4-43)
LS-33 BOARD
D PG, D FG
(See Page 4-43)
SL-38
TERMINAL BOARD
J201
VIDEO
RFU DC OUT
AUDIO
VIDEO I/O
5V
AUDIO I/O L
IC201, IC203, IC205
DATA TO SLAVE, DATA TO MASTER, VTR SCK
CAM Y
VIDEO I/O
EVF Y
CAM C
Y PROCESS
C PROCESS
Y RF
PB RF
IC951
EVR
ADJUST VOLTAGE
IC206
JOG CHROMA PROCESS
PB C RF
REC C RF
IC102
REC/PB AMP
CH2
CH1
RF SWP
HC HG
FLYING ERASE OSC
FE
FLYING ERASE
CH2
CH1
MD A-MECHA
M901 DRUM MOTOR
DRUM PG, FG
M
IC506 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC901 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (-)
CAP VS
DD-77 BOARD (1/4)
(See Page 4-49)
MA-231 BOARD (1/2)
IC003
MIC AMP
MIC
MIC L
J001
EXT MIC
AU-183 BOARD (1/2) (See Page 4-47)
IC401
AFM AUDIO PROCESS
AUDIO I/O L
MIC L
EARPHONE L
REC AFM RF
PB RF
REC ATF
PB RF
IC508
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG, SP/LP DET
DD-77 BOARD (1/4)
(See Page 4-57)
J903
EARPHONE
09

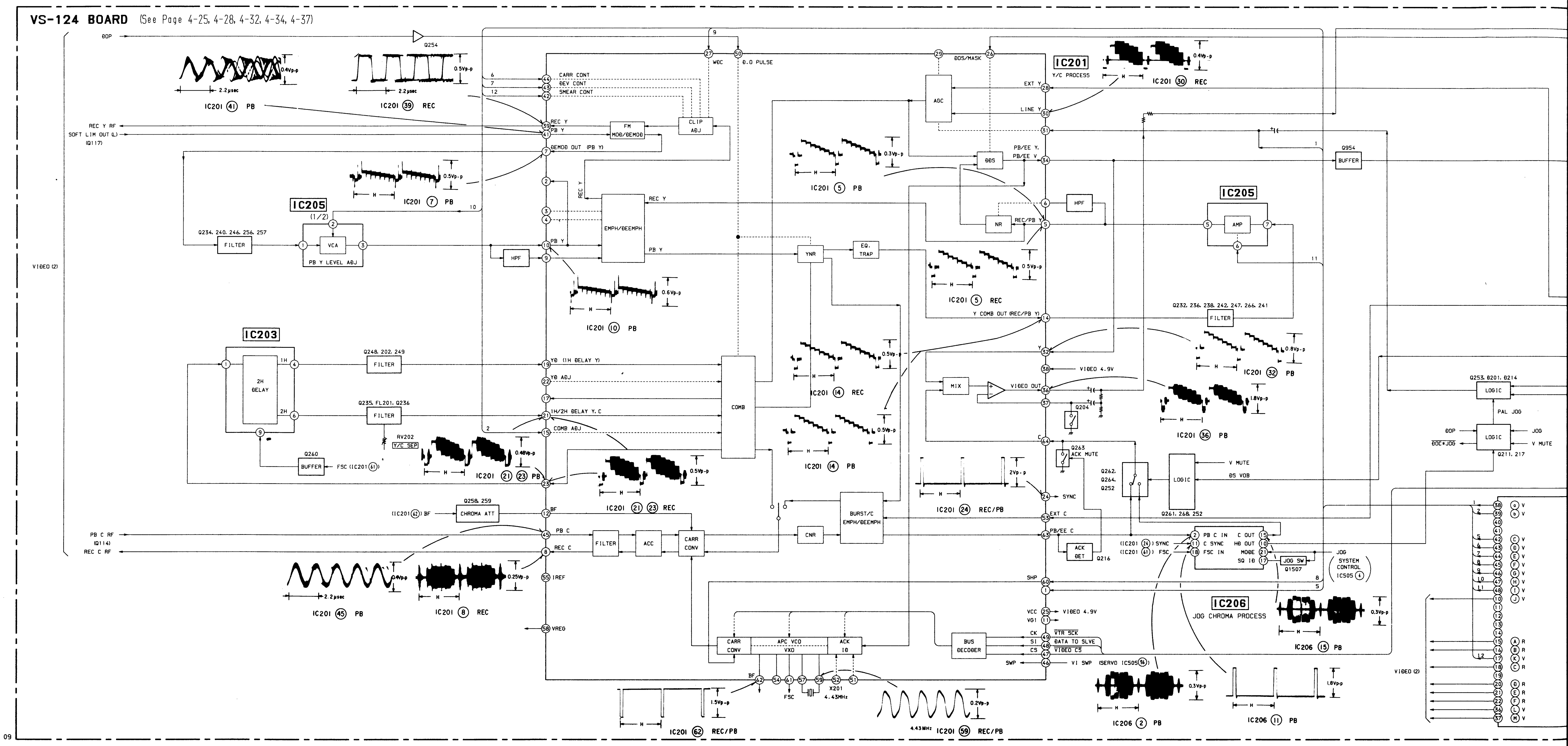

4-25, 4-28, 4-32, 4-34, 4-37)
DATA TO SLAVE , DATA TO MASTER , VTR SCK
-40
ARD
e 4-43)
M903
LOADING MOTOR
S001
MODE SWITCH
S005 C.C. DOWN
R009
DEW SENSOR
TAPE TOP SENSOR
Q001
H001
T REEL FG SENSOR
H002
S REEL FG SENSOR
Q002
TAPE END SENSOR
S002
ME/MP
REC PROOF
BOARD
LOADING, UN LOAD
LOADING MOTOR DRIVE
IC507 (1/4)
MSW 0-2
CC DOWN
DEW SENS
TOP SENS
IC507 (1/4)
T REEL (+), (-)
T REEL FG AMP
S REEL (+), (-)
S REEL FG AMP
END SENS
T/E LED ON
ME/MP SW
REC PROOF SW
IC507 (1/4)
D PG , D FG
WAVE SHAPER
DRUM PG , DRUM FG
(See Page 4-43)
SL-38 BOARD (1/2)
Q503 (1/2)
TAPE TOP DETECT
Q503 (1/2)
TAPE END DETECT
LOAD , UN LOAD
DEW
T REEL FG
S REEL FG
IC505
SYSTEM CONTROL / SERVO
SYSTEM CONTROL
SERVO
VIDEO, AUDIO, SERVO, CONTROL SIG
CLOG , SP/LP DET
RF SWP
IC501
EEPROM
CC DOWN
CHIP SELECT
IC503
MODE CONTROL (MASTER)
SIRCS SIG
EJECT, START/STOP
K AD IN 0, 1
VTR MODE SW, CAM+STBY MODE SW
AGE, DATE, TIME
K AD 2-4
VTR DD ON
CAM DD ON
BACK UP VDD
IC502
BACK UP VDD SWITCH
LI 3V
VTR UNREG
06 (1/2)
MOTOR
IVE
DRUM VS
CAP VS
IC901 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DD-77 BOARD (1/4)
(See Page 4-57)
DRUM ERROR
CAP ERROR
IC506 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
CAP FG
REF PILOT
ATF ERROR
AU-183 BOARD (1/2)
(See Page 4-47)
MA-231 BOARD (1/2)
(See Page 4-49)
REMOTE CONTROL RECEIVER
IC002
CONTROL SWITCH BLOCK (CK)
ZOOM SW
ZOOM SWITCH
S102, 103
EJECT, START/STOP KEY
S104-106, 109-111, 100
VTR FUNCTION KEY
S101
STANDBY SWITCH
CONTROL SWITCH BLOCK (FK)
S223
POWER SWITCH
S200-222
DDS KEY
S201-208, 217
CAMERA FUNCTION KEY MENU KEY
ZB-2 BOARD
(See Page 4-40)
LI101
LITHIUM BATTERY
(See Page 4-43)
IC507 (1/4)
LANC I/O
SL-38 BOARD (1/2)
LANC SIG
J902
REMOTE
DD-77 BOARD (1/4)
(See Page 4-57)
DD-77 BOARD (1/4)
(See Page 4-57)
IC901 (1/2)
CAM DD ON
VTR DD ON
CAM 15V
CAM -8.5V
CAM 5V
D5V
D3.6V
CAMERA DC/DC CONVERTER
R/P 5V
MT 5V
EVF 5V
AU 5V
VID 5V
SS 3.6V
VTR DC/DC CONVERTER
MOTOR UNREG
VTR UNREG
EVF UNREG
MAIN BATTERY
ELECTRONIC VIEWFINDER
(See Page 4-51)
VF-65 BOARD
V901
DY
H V
DH1 , DH2
T901
HV
H
H OUT
IC901
EVF Y
CRT DRIVE
G1
CRT

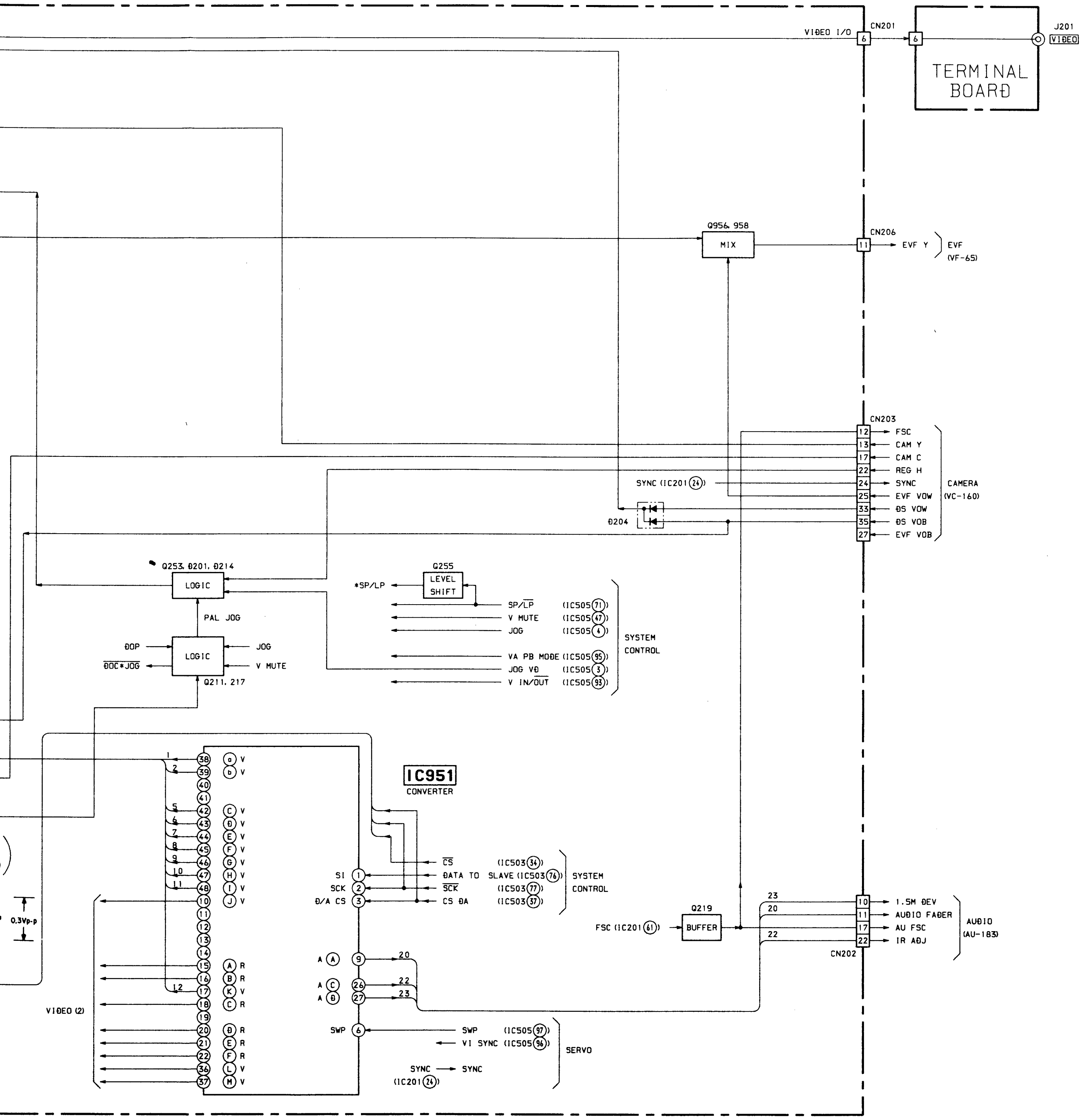
3-2. CAMERA BLOCK DIAGRAM


VC-160 BOARD (See Page 4-9, 4-11, 4-13)
CD-137 BOARD (See Page 4-5)
IC691
CCD IMAGER
CCD OUT
Q691, 692
BUFFER
W692
CN701
V1
V2
V3
V4
RG
H2
H1
LH1
VL
SUB
VDD (+15V)
CAM-8.5V
V SUB CNT
CAM 15V
CAM5V
IC691 ⑧
0.8Vp-p
9Vp-p
IC691 ① ②
IC691 ③ ④
IC703
SIGNAL SEPARATION, AGC
XSHP
XSHD
AGC MAX
AGC CONT
XRS
PBLK
PG
DATA
VCC1
VCC2
VCC3
AGC
CLAMP
CCD LEVEL
CLPOB
CLPDM
LINE
CAM/VIDEO
AMP
OUT
CAM CLAMP
OUT CLP
OFFSET
REF TOP
REF BOTTOM
VRT
VRB
AGC CONT 2
AGC CONT 1
TESTX
A/D REF
1.6Vp-p
IC703 ㉕
1.5Vp-p
IC703 ⑧
IC704
A/D CONVERTER
D3.6V
TP710
A IN
EVA
STATE
D9 (MSB)
D0 (LSB)
CLK
REFF
REFBF
D5V
CAM ON
3.6Vp-p
1.4μsec
IC704 ①
IC701
V DRIVE
CAM-8.5V
VL
VH
CAM15V
V SUB
X SUB
XV 2
XV 1
XSG 1
XV 3
XSG 2
XV 4
DC OUT
DC GENERATOR
DC IN
TP703
IC702
TIMING GENERATOR
D 3.6V
VDD1
VDD4
VDD5
VDD6
XV SUB
D 5V
VDD2
VDD3
CLPDM
XSHP
XSHD
XRS
PBLK
ID
WEN
DEF
VGAT
MCK
CL
TP709
CK
OSC O
OSC I
X701 28.375MHz
CT701 PRIME OSCILLATION
AHD
AVD
SSK
SSI
SEN
RST
CAM SCK
CAM SO
CS TG
SYS RST
4.8Vp-p
14.187MHz
IC702 ⑫
1Vp-p
28.375MHz
IC702 ⑤
V SUB CONT
Q701
PG CONT
DC BIAS
TP707
DEFECT CO
XV1
XSG1
XVV1
XSG1
PBLK
MCK
IDEF
AVD2
AVD1
VDD
VDI
HD
CLP1
MCK
AHD
CL
WEN
ZOOM LENS UNIT
M904 IRIS METER
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
CN751
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
SENSE VCC
ZOOM SENSOR
ZM RST
RST LED
FOCUS SENSOR
FC RST
SN/CA
LENS TYPE
M906 ZOOM MOTOR
ZM A
ZM B
M905 FOCUS MOTOR
FC A
FC B
IC751 (1/2)
IRIS DRIVE
IC752 (1/3)
IRIS DRIVE
IC755
LPF
IRIS PWM
HALL A/D
IC752 (1/3)
HALL BIAS CONTROL
IC751 (1/2)
HALL AMP
Q752
IC752 (1/3)
HALL GAIN CONTROL
HALL GAIN
HALL OFSET
REF 2V
6Vp-p
14.187MHz
IC753 ⑧
D3.6V
Q752
IC603
D/A CONVERTER (EVR)
AGC CONT 1
AGC CONT 2
V SUB CONT
PG CONT
V REF Y
V REF C
H GAIN
H OFS
REF 2V
A/D REF
VCC
VDD
D5V
CAM5V
SO
CS CAM D/A
CAM SCK
SI
DA STB
CS CAM
CAM SO
3.8Vp-p
IC753 ①
IC753
ZOOM/FOCUS PRE DRIVE
IC753 ②
CK IN
EN1
DIR 1B
DIR 1A
EN0
DIR 0B
DIR 0A
PAL
CLEAR
S OUT
S IN
SCK
CS
HD IN
VD IN
VDD
NTSC
PDR RST
CAM SI
CS PDR
PBV
IC754
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
EN4
IN4
EN3
IN3
EN2
IN2
EN1
IN1
VM1
VM2
VM3
VC
D3.6V
MT5V
IC602
CAMERA CONTROL
WEN
IRIS PWM
HALL A/D
24MHz
IC602 ⑭
X601 24MHz
EXTAL
2.5Vp-p
D3.6V
VDD
LENS RST LED
FC RST
ZM RST
LENS TYPE
RESET
VTR SO
VTR SCK
CAM CS
PB V
VTR SI
ZOOM SW
TEST X
START
CAM ON
DA STB
CS TG
CS CORE
CAM SCK
CAM SO
CAM SI
VST/CORE RST
CS CAM DPD
CS AF DPD
NTSC
NRML/VST
DPD RST
CS EEP ROM
EEP ROM RESET
EEP ROM BUSY
CS PDR
PDR RST
START
DPD RST
IC602 ③
4.7Vp-p
OPTICAL
NT/PAL
ZOOM
DPD RESET
CS AF DPD
AF SI
AF SO
AF SCK
CS CAM DPD
CAM SI
CAM SO
CAM SCK
NORMAL/VST
VCC
EEP
CS
RES
BUSY
SCK
DI
DO
09


IC705
DEFECT COMPENSATION
XV1
XSG1
XVV1
XSG1
X DEF
D DEF
PBLK
MCK
IDEF
SG19 (MSB)
SG10 (LSB)
MRST
TESTX
SRT
OPB RST
TEST X
START
VDD
VDI
HD
D3.6V
14.187MHz
4.8Vp-p
IC702 ⑫
TP709
X701
28.375MHz
CT701
PRIME
OSCILLATION
CAM SCK
CAM SO
CS TG
SYS RST
AHD
AVD2
AVD1
IC609
D/A CONVERTER
IC609 (96)
1.4μsec
4Vp-p
IC609 (49)
1Vp-p
IC609 (27)
0.3Vp-p
ADD
ADO
OPDD
OPDO
DIGITAL
CAMERA
PROCESS
D/A
CONV
IOY
VREF Y
IOC
VREF C
VDD
14.187MHz
3.8Vp-p
IC609 (78)
SCK
SI
XCE
SO
XCLR
CS CORE
CORE RST
OPB ID
CL
DEF
ID
MCK
WKEY
CSYNC
LALT
CBK
BF
AJST
VD
HD
HHLD
VHLD
VCK
AVD C
AVD Y
D3.6V
IC609 (69)
IC609 (70)
IC604
CHARACTER MIX
WHITE LEVEL
BLACK LEVEL
BLK2
VC2
Q604
BUFFER
Q605
FL601
Y
LPF
Q607
Q606
CHROMA
BPF
TP607
TP609
CN601
CAM Y
CAM C
FSC
REG H
PB SYNC
DS VDW
DS VDB
EVF VDW
EVF VDB
PB V
SYS RESET
DATA TO SLVE
CS OSD
SCK
FLD
CAM VD
CS CAM
DATA TO MSTR
CS SG
ZOOM SW
VIDEO (1)
(VS-124)
SYSTEM CONTROL
(VS-124)
IC614
ON SCREEN DISPLAY
OSC IN
H SYNC
CG CK
CD H
VC1
BLK1
VG
VBLK
VC2
VBLK2
V SYNC
PCL
DATA
CS
CLK
VTR SI
VTR SCK
VTR SO
CG V
IC611
OPTICAL DETECTOR
NTSC
NORMAL/VST
NT/PAL
ZOOM
OPB RESET
CS AF OPB
AF SI
AF SO
AF SCK
CS CAM OPB
CAM SI
CAM SO
CAM SCK
VCC
D3.6V
VD
HD
CLP1
AVD
DHD
IC610
SYNC GENERATOR
C SYNC
C BLK
BF
LALT
W KEY
REG H
MCK
CL
CGV
CGH
CGCK
SLAVE
COUNTER
MASTER
COUNTER
HHLD
VHLD
AHD
AVD1
CLP1
CLP2
DHD
FLD1
FLD2
FLD
PB V
AFC H
AFC
PLL
SERIAL
LATCH
SI
XCE
XRES
VTR SCK
VTR SI
CS SG
SYS RESET
AFCO
AFCI
ADO
ADI
XPBF
PBF
LCK
FSC
PB SYNC
VCK
PSEL
PDP
PLLI
PLLO
OSCI
OSCO
LPF
4.43MHz
1.4Vp-p
IC610 (54)
2.6Vp-p
IC610 ⑭
IC601
EEP ROM
RES
BUSY
SCK
DI
DO
4.7Vp-p
IC602 ③
REG H
STB
NTSC
OPB

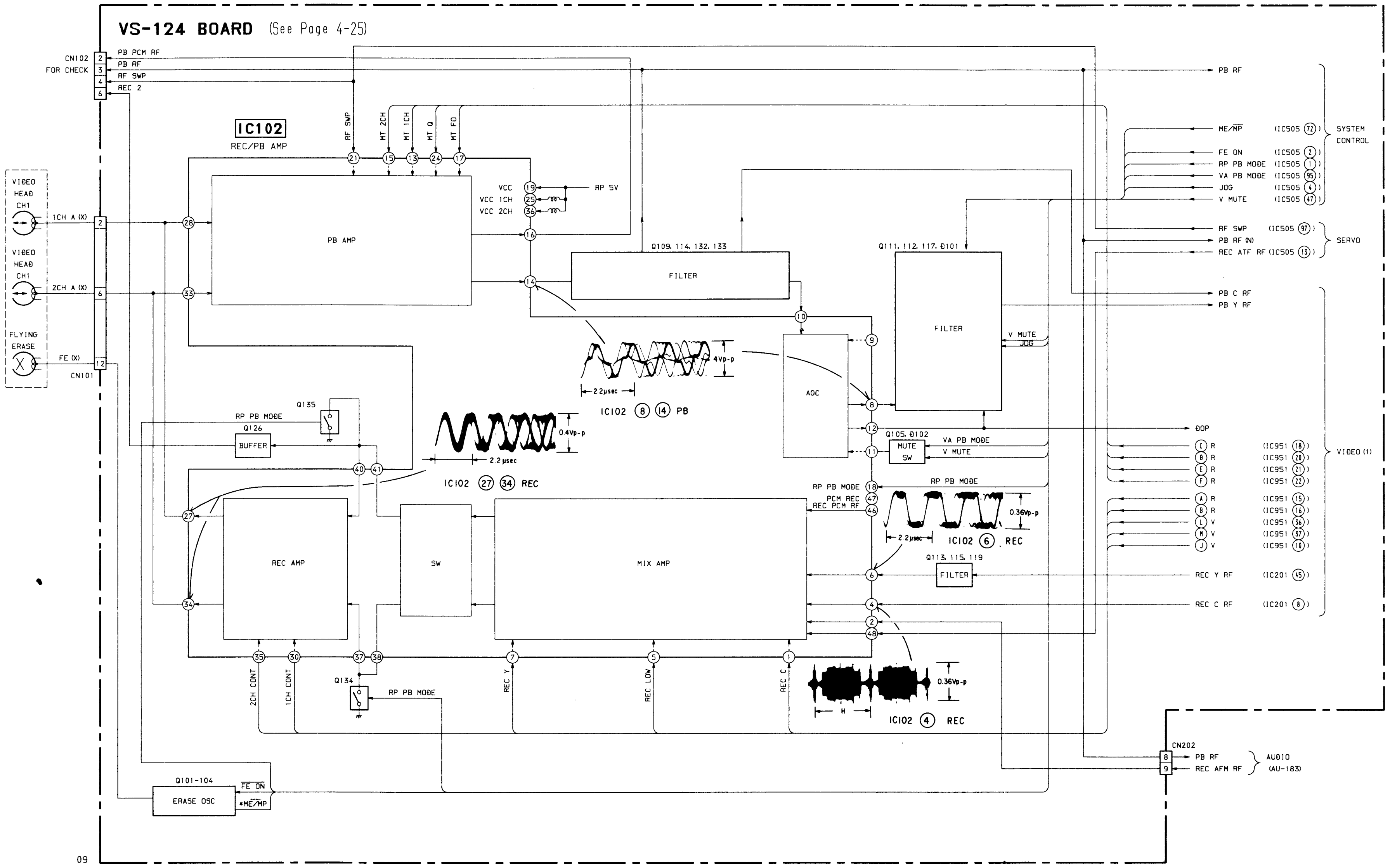
3-3. VIDEO (1) BLOCK DIAGRAM


VS-124 BOARD (See Page 4-25, 4-28, 4-32, 4-34, 4-37)
DOP
Q254
IC201 (41) PB
IC201 (39) REC
2.2μsec
0.4Vp-p
0.5Vp-p
REC Y RF
SOFT LIM OUT (L)
(Q117)
CARR CONT
DEV CONT
SMEAR CONT
REC Y
PB Y
FM MOD/DEMOD
CLIP ADJ
DEMOD OUT (PB Y)
WDC
D.O PULSE
DOS/MASK
IC201
Y/C PROCESS
IC201 (30) REC
EXT Y
LINE Y
AGC
DOS
PB/EE Y, PB/EE V
Q954
BUFFER
IC201 (7) PB
IC205 (1/2)
VCA
PB Y LEVEL ADJ
Q234, 240, 246, 256, 257
FILTER
VIDEO (2)
EMPH/DEEMPH
HPF
YNR
EQ. TRAP
NR
REC/PB Y
IC205
AMP
IC201 (5) PB
IC201 (5) REC
IC201 (10) PB
0.6Vp-p
Y COMB OUT (REC/PB Y)
Q232, 236, 238, 242, 247, 266, 241
IC201 (32) PB
0.8Vp-p
IC203
2H DELAY
1H
2H
Q248, 202, 249
Q235, FL201, Q236
RV202
Y/C SEP
Q260
FSC (IC201 (61))
YD (1H DELAY Y)
YD ADJ
1H/2H DELAY Y, C
COMB ADJ
COMB
IC201 (14) REC
IC201 (14) PB
MIX
VIDEO OUT
VIDEO 4.9V
Q204
IC201 (36) PB
1.8Vp-p
Q253, Q201, Q214
LOGIC
PAL JOG
DOP
DOC•JOG
JOG
V MUTE
Q211, 217
Q263
ACK MUTE
Q262, Q264, Q252
LOGIC
V MUTE
DS VOD
Q261, 268, 252
IC201 (21) (23) PB
0.48Vp-p
IC201 (21) (23) REC
0.5Vp-p
IC201 (24) REC/PB
2Vp-p
SYNC
Q258, 259
(IC201 (62)) BF
CHROMA ATT
BF
PB C
REC C
PB C RF
(Q114)
REC C RF
FILTER
ACC
CARR CONV
CNR
BURST/C EMPH/DEEMPH
EXT C
PB/EE C
ACK DET
Q216
PB C IN
C OUT
C SYNC
HD OUT
FSC IN
MODE
SQ ID
(IC201 (24)) SYNC
(IC201 (61)) FSC
JOG SW
Q1507
SYSTEM CONTROL IC505 (4)
IC206
JOG CHROMA PROCESS
IC206 (15) PB
0.3Vp-p
IC201 (45) PB
IC201 (8) REC
0.25Vp-p
IREF
VREG
SHP
VCC
VG1
CK
SI
CS
SWP
VTR SCK
DATA TO SLVE
VIDEO CS
VI SWP (SERVO IC505 (96))
BUS DECODER
CARR CONV
APC VCO VXO
ACK ID
FSC
X201 4.43MHz
IC201 (62) REC/PB
1.5Vp-p
IC201 (59) REC/PB
4.43MHz
0.2Vp-p
IC206 (2) PB
IC206 (11) PB
VIDEO (2)
09

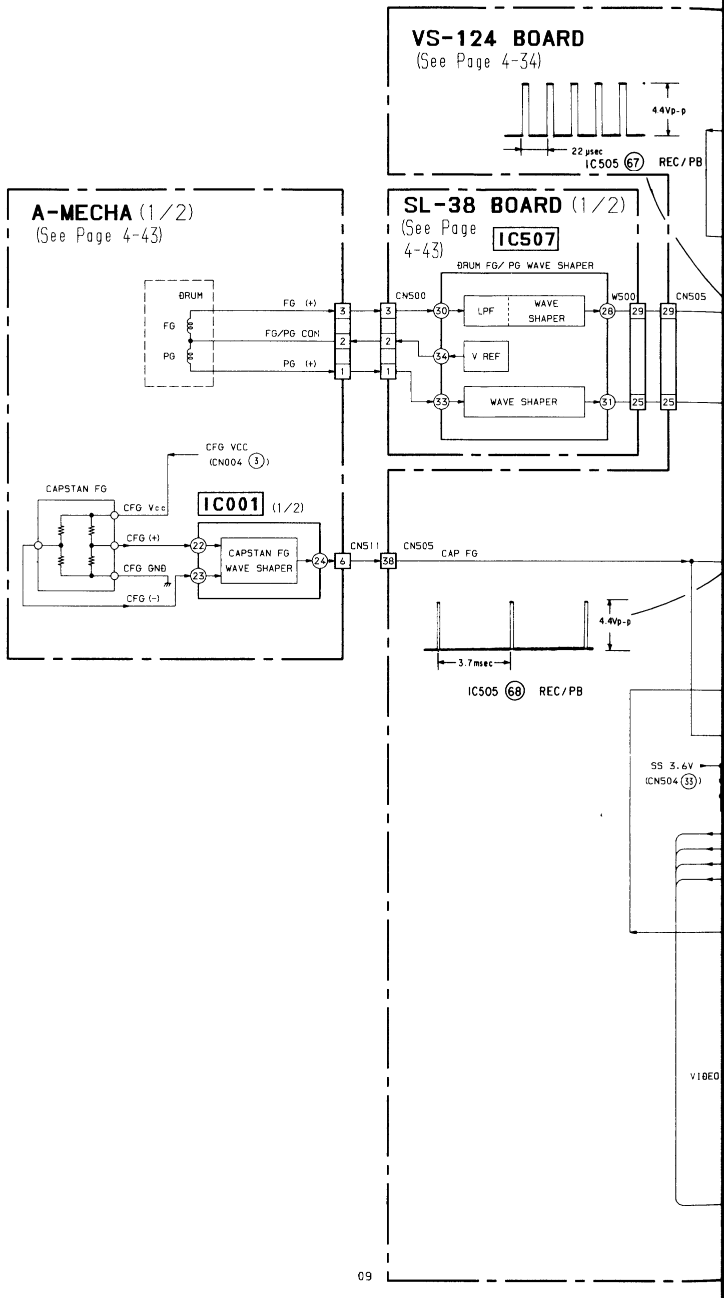

VIDEO I/O
CN201
6
6
J201
VIDEO
TERMINAL BOARD
Q956, 958
MIX
CN206
11
EVF Y
EVF (VF-65)
CN203
12 FSC
13 CAM Y
17 CAM C
22 REG H
24 SYNC
25 EVF VDW
33 DS VDW
35 DS VDB
27 EVF VDB
CAMERA (VC-160)
SYNC (IC201 ㉔)
D204
Q253, D201, D214
LOGIC
Q255
LEVEL SHIFT
*SP/LP
SP/$\overline{LP}$ (IC505 ㉛)
V MUTE (IC505 ㊼)
JOG (IC505 ④)
VA PB MODE (IC505 (95))
JOG VD (IC505 ③)
V IN/$\overline{OUT}$ (IC505 (93))
SYSTEM CONTROL
PAL JOG
DOP
$\overline{DOC*JOG}$
LOGIC
JOG
V MUTE
Q211, 217
IC951
CONVERTER
38 a V
39 b V
40
41
42 C V
43 D V
44 E V
45 F V
46 G V
47 H V
48 I V
10 J V
11
12
13
14
15 A R
16 B R
17 K V
18 C R
19
20 D R
21 E R
22 F R
36 L V
37 M V
1 2 5 6 7 8 9 10 11 12
0.3Vp-p
VIDEO (2)
SI ①
SCK ②
D/A CS ③
$\overline{CS}$ (IC503 ㉞)
DATA TO SLAVE (IC503 (76))
$\overline{SCK}$ (IC503 (77))
CS DA (IC503 ㊲)
SYSTEM CONTROL
A Ⓐ ⑨ 20
A Ⓒ ㉖ 22
A Ⓓ ㉗ 23
SWP ⑥
SWP (IC505 (97))
VI SYNC (IC505 (96))
SYNC → SYNC (IC201 ㉔)
SERVO
FSC (IC201 (61))
Q219
BUFFER
23
20
22
CN202
10 1.5M DEV
11 AUDIO FADER
17 AU FSC
22 IR ADJ
AUDIO (AU-183)

3-12

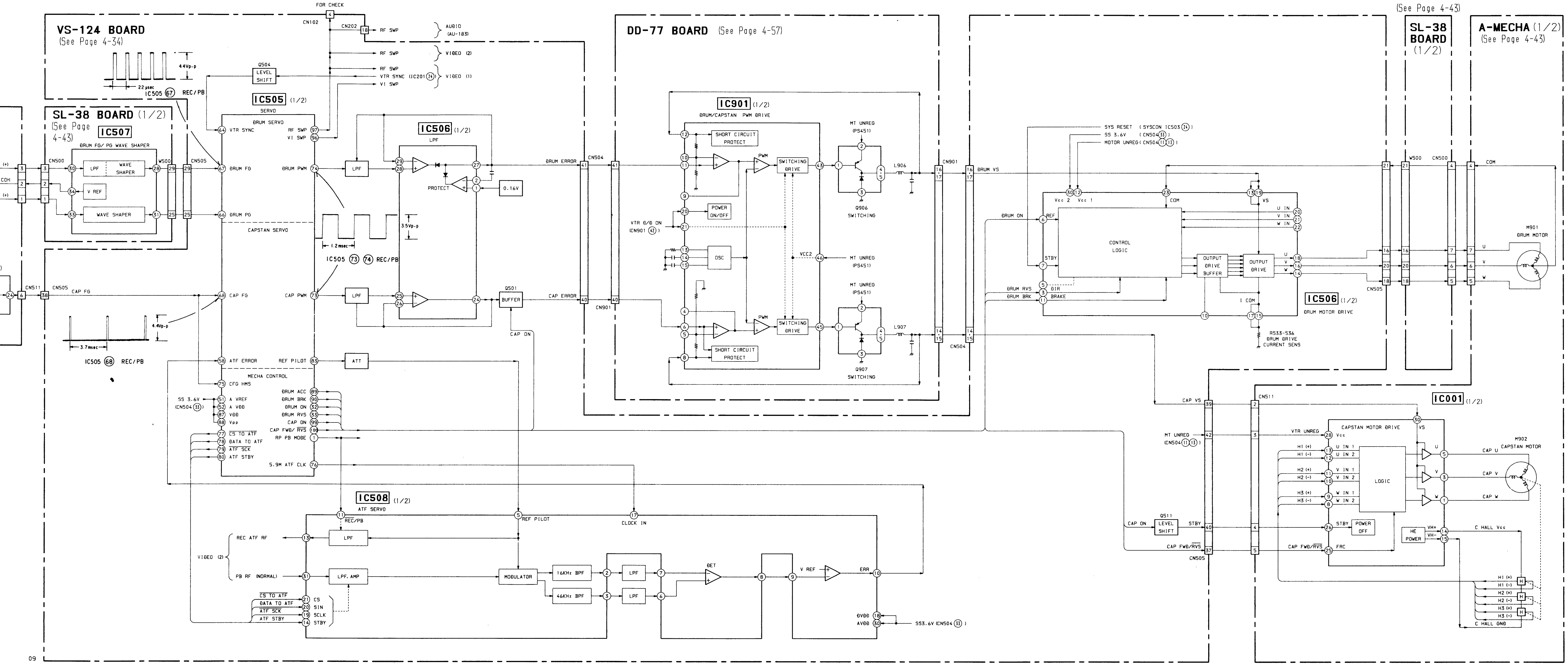
3-4. VIDEO (2) BLOCK DIAGRAM


VS-124 BOARD (See Page 4-25)
CN102
FOR CHECK
PB PCM RF
PB RF
RF SWP
REC 2
VIDEO HEAD CH1
1CH A (X)
VIDEO HEAD CH1
2CH A (X)
FLYING ERASE
FE (X)
CN101
IC102
REC/PB AMP
RF SWP
MT 2CH
MT 1CH
MT Q
MT FO
PB AMP
VCC
VCC 1CH
VCC 2CH
RP 5V
Q109, 114, 132, 133
FILTER
Q111, 112, 117, D101
FILTER
V MUTE
JOG
AGC
4Vp-p
2.2μsec
IC102 ⑧ ⑭ PB
0.4Vp-p
2.2μsec
IC102 ㉗ ㉞ REC
Q135
RP PB MODE
Q126
BUFFER
Q105, D102
MUTE SW
VA PB MODE
V MUTE
RP PB MODE
RP PB MODE
PCM REC
REC PCM RF
0.36Vp-p
2.2μsec
IC102 ⑥ REC
Q113, 115, 119
FILTER
REC AMP
SW
MIX AMP
2CH CONT
1CH CONT
Q134
RP PB MODE
REC Y
REC LOW
REC C
0.36Vp-p
H
IC102 ④ REC
Q101-104
ERASE OSC
FE ON
*ME/MP
PB RF
ME/MP (IC505 ㊷)
FE ON (IC505 ②)
RP PB MODE (IC505 ①)
VA PB MODE (IC505 95)
JOG (IC505 ④)
V MUTE (IC505 ㊼)
SYSTEM CONTROL
RF SWP (IC505 97)
PB RF (N)
REC ATF RF (IC505 ⑬)
SERVO
PB C RF
PB Y RF
DOP
Ⓒ R (IC951 ⑱)
Ⓓ R (IC951 ⑳)
Ⓔ R (IC951 ㉑)
Ⓕ R (IC951 ㉒)
Ⓐ R (IC951 ⑮)
Ⓑ R (IC951 ⑯)
Ⓛ V (IC951 ㊱)
Ⓜ V (IC951 ㊲)
Ⓙ V (IC951 ⑩)
REC Y RF (IC201 ㊺)
REC C RF (IC201 ⑧)
VIDEO (1)
CN202
PB RF
REC AFM RF
AUDIO (AU-183)
09

3-5. SERVO BLOCK DIAGRAM

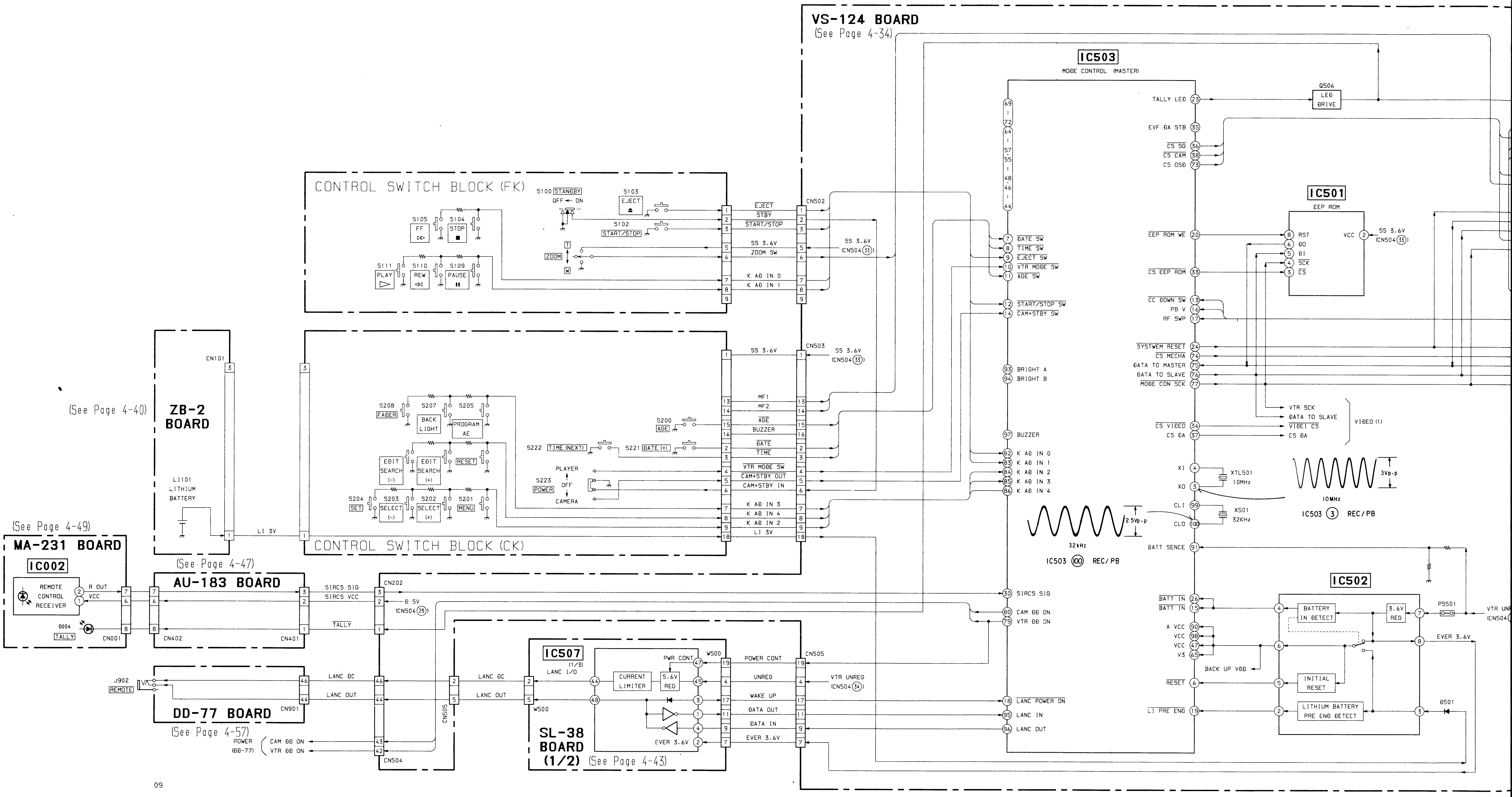

VS-124 BOARD
(See Page 4-34)
4.4Vp-p
22μsec
IC505 ㊼ REC/PB
A-MECHA (1/2)
(See Page 4-43)
DRUM
FG
PG
FG (+)
FG/PG COM
PG (+)
SL-38 BOARD (1/2)
(See Page 4-43)
IC507
DRUM FG/PG WAVE SHAPER
CN500
LPF
WAVE SHAPER
V REF
WAVE SHAPER
W500
CN505
CFG VCC
(CN004 ③)
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
CN511
CN505
CAP FG
4.4Vp-p
3.7msec
IC505 ㊽ REC/PB
SS 3.6V
(CN504 ㉝)
VIDEO
09

DIAGRAM

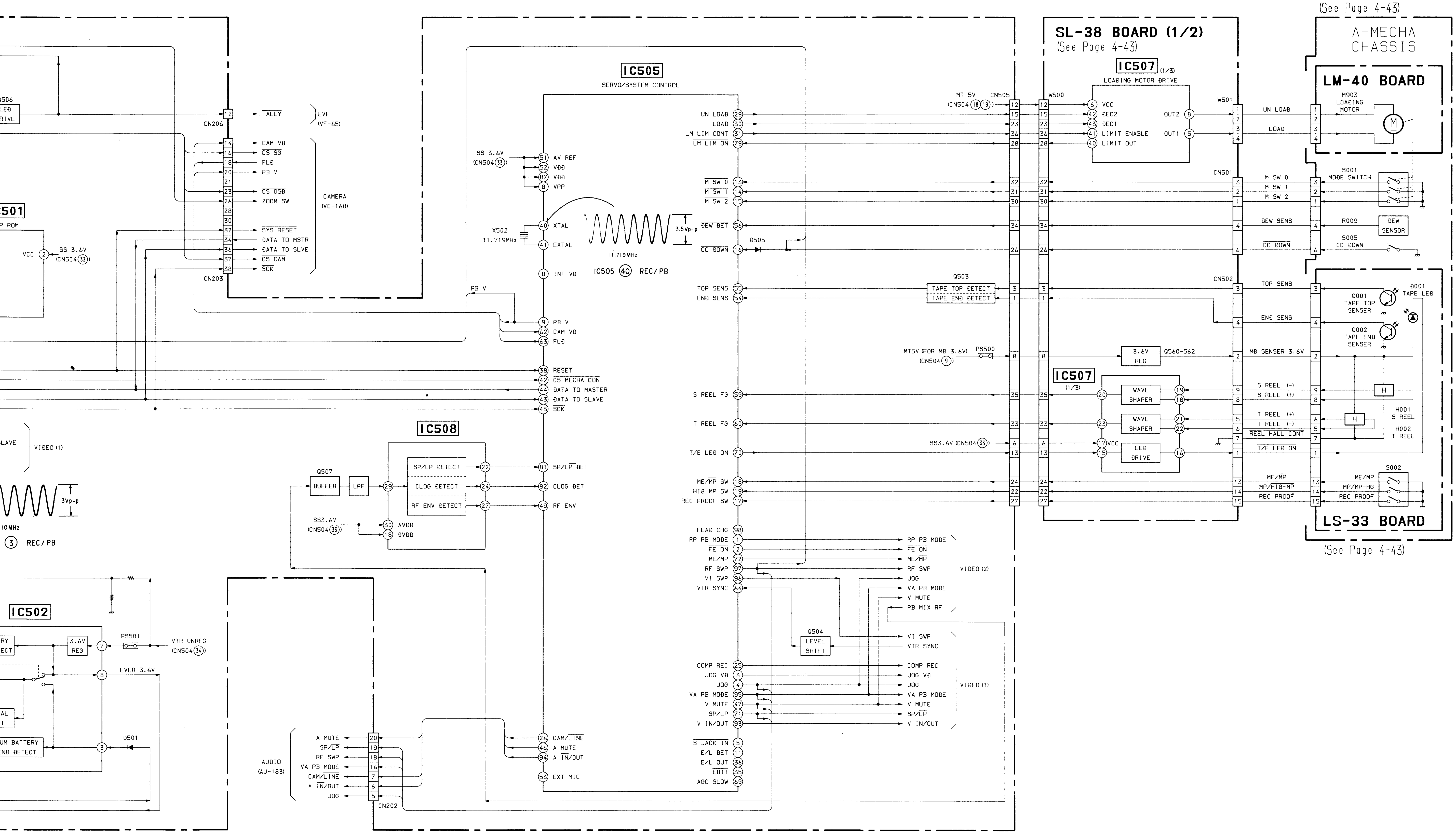


VS-124 BOARD
(See Page 4-34)
SL-38 BOARD (1/2)
(See Page 4-43)
IC507
DRUM FG/ PG WAVE SHAPER
IC505 (1/2)
SERVO
DRUM SERVO
CAPSTAN SERVO
MECHA CONTROL
IC506 (1/2)
LPF
IC508 (1/2)
ATF SERVO
DD-77 BOARD (See Page 4-57)
IC901 (1/2)
DRUM/CAPSTAN PWM DRIVE
SL-38 BOARD (1/2)
(See Page 4-43)
A-MECHA (1/2)
(See Page 4-43)
IC506 (1/2)
DRUM MOTOR DRIVE
IC001 (1/2)
CAPSTAN MOTOR DRIVE
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
FOR CHECK
CN102
CN202
RF SWP
AUDIO (AU-183)
VIDEO (2)
VTR SYNC (IC201 74)
VIDEO (1)
V1 SWP
Q504 LEVEL SHIFT
4.4Vp-p
22 μsec
IC505 67 REC/PB
3.5Vp-p
1.2msec
IC505 73 74 REC/PB
4.4Vp-p
3.7msec
IC505 68 REC/PB
DRUM FG
DRUM PG
CAP FG
DRUM PWM
CAP PWM
DRUM ERROR
CAP ERROR
Q501 BUFFER
CAP ON
PROTECT
0.16V
ATF ERROR
REF PILOT
ATT
CFG HMS
SS 3.6V (CN504 33)
A VREF
A VDD
VDD
Vpp
CS TO ATF
DATA TO ATF
ATF SCK
ATF STBY
DRUM ACC
DRUM BRK
DRUM ON
DRUM RVS
CAP ON
CAP FWD/RVS
RP PB MODE
5.9M ATF CLK
REC/PB
REF PILOT
CLOCK IN
REC ATF RF
PB RF (NORMAL)
VIDEO (2)
LPF, AMP
MODULATOR
16KHz BPF
46KHz BPF
DET
V REF
ERR
DVDD
AVDD
SS3.6V (CN504 33)
CS
SIN
SCLK
STBY
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
OSC
VCC2
VTR D/D ON (CN901 42)
MT UNREG (PS451)
Q906 SWITCHING
Q907 SWITCHING
L906
L907
CN504
CN901
DRUM VS
SYS RESET (SYSCON IC503 24)
SS 3.6V (CN504 33)
MOTOR UNREG (CN504 11 13)
CONTROL LOGIC
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM ON
DRUM RVS
DRUM BRK
REF
STBY
DIR
BRAKE
Vcc 2
Vcc 1
COM
VS
U IN
V IN
W IN
I COM
R533-536 DRUM DRIVE CURRENT SENS
CN505
W500
CN500
CN511
CAP VS
MT UNREG (CN504 11 13)
Q511 LEVEL SHIFT
CAP ON
STBY
CAP FWD/RVS
VTR UNREG
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
LOGIC
POWER OFF
HE POWER
FRC
VH+
VH-
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND
09

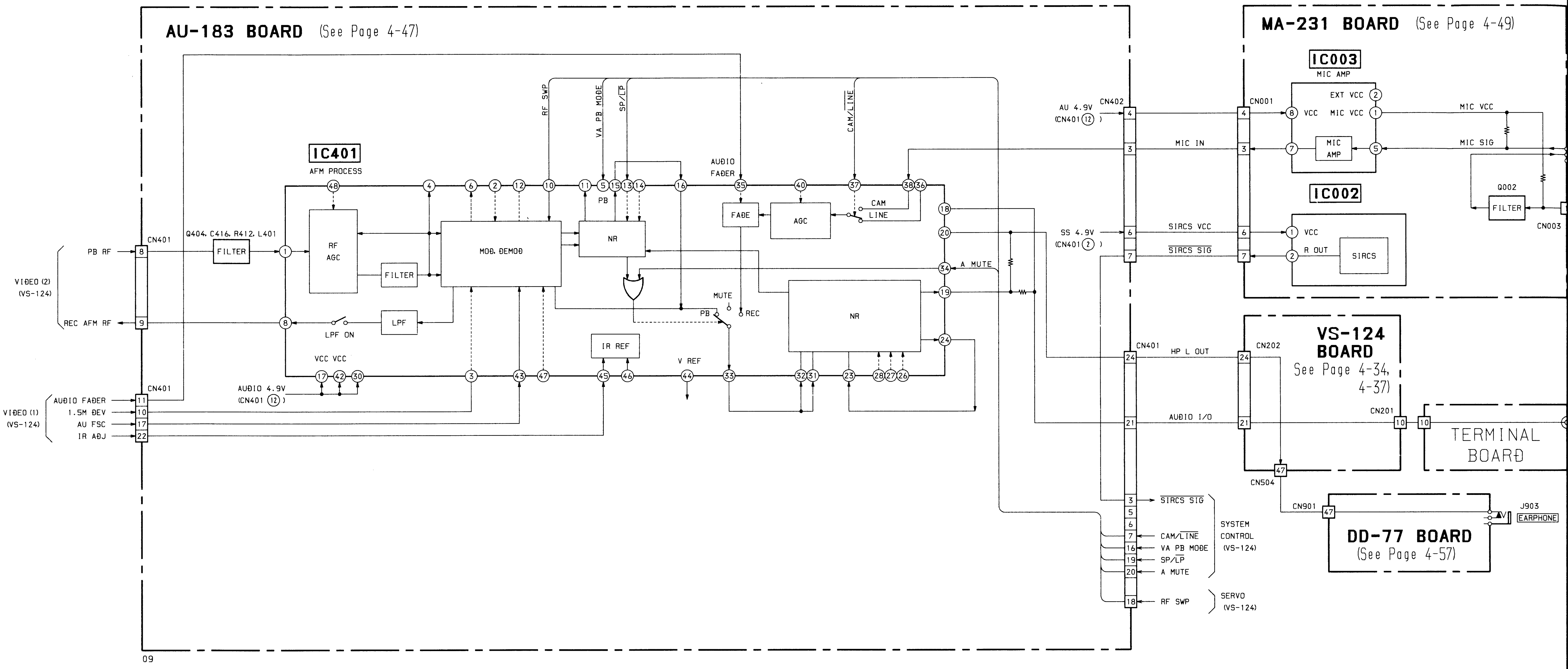
3-6. SYSTEM CONTROL BLOCK DIAGRAM



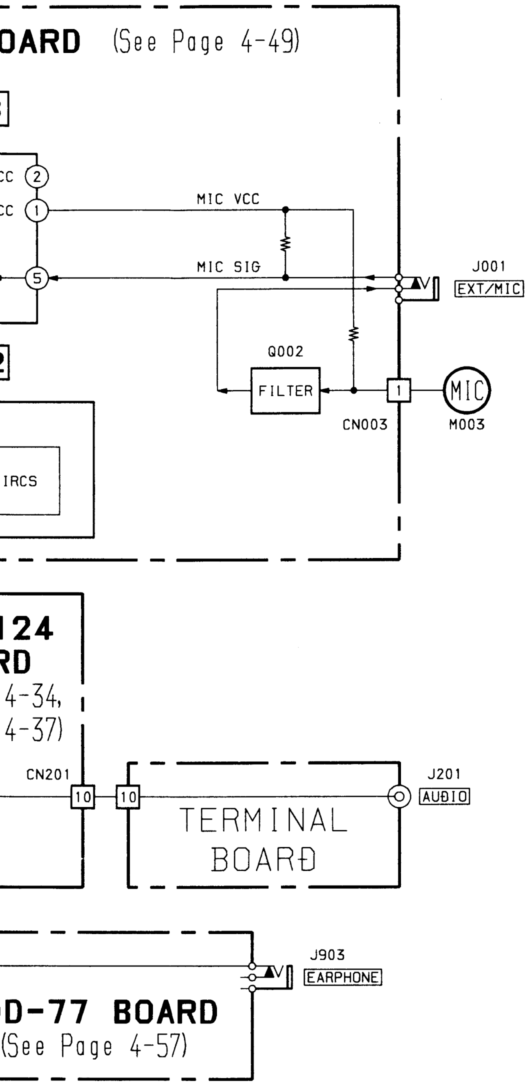
VS-124 BOARD
(See Page 4-34)
IC503
MODE CONTROL (MASTER)
TALLY LED
EVF DA STB
CS SG
CS CAM
CS OSD
EEP ROM WE
CS EEP ROM
CC DOWN SW
PB V
RF SWP
SYSTWEM RESET
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
CS VIDEO
CS DA
XI
XO
CLI
CLO
BATT SENCE
BATT IN
BATT IN
A VCC
VCC
VCC
V3
RESET
LI PRE END
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AGE SW
START/STOP SW
CAM+STBY SW
BRIGHT A
BRIGHT B
BUZZER
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
SIRCS SIG
CAM DD ON
VTR DD ON
LANC POWER ON
LANC IN
LANC OUT
Q506
LED DRIVE
IC501
EEP ROM
RST
DO
DI
SCK
CS
VCC
SS 3.6V (CN504㉝)
VTR SCK
DATA TO SLAVE
VIDEI CS
CS DA
VIDEO (1)
XTL501 10MHz
X501 32KHz
3Vp-p
10MHz
IC503 ③ REC/PB
2.5Vp-p
32kHz
IC503 ⑩⓪ REC/PB
IC502
BATTERY IN DETECT
3.6V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
BACK UP VDD
PS501
VTR UNR (CN504
EVER 3.6V
D501
CONTROL SWITCH BLOCK (FK)
S100 STANDBY
OFF ← ON
S103 EJECT
S102 START/STOP
S105 FF
S104 STOP
S111 PLAY
S110 REW
S109 PAUSE
ZOOM
T
W
EJECT
STBY
START/STOP
SS 3.6V
ZOOM SW
K AD IN 0
K AD IN 1
CN502
SS 3.6V (CN504㉝)
CN101
ZB-2 BOARD
(See Page 4-40)
LI101 LITHIUM BATTERY
LI 3V
CN503
SS 3.6V (CN504㉝)
S208 FADER
S207 BACK LIGHT
S205 PROGRAM AE
S200 AGE
S222 TIME (NEXT)
S221 DATE (+)
EDIT SEARCH (−)
EDIT SEARCH (+)
RESET
PLAYER
S223 POWER
OFF
CAMERA
S204 SET
S203 SELECT (−)
S202 SELECT (+)
S201 MENU
MF1
MF2
AGE
BUZZER
DATE
TIME
VTR MODE SW
CAM+STBY OUT
CAM+STBY IN
K AD IN 3
K AD IN 4
K AD IN 2
LI 3V
CONTROL SWITCH BLOCK (CK)
(See Page 4-49)
MA-231 BOARD
IC002
REMOTE CONTROL RECEIVER
R OUT
VCC
D004 TALLY
CN001
(See Page 4-47)
AU-183 BOARD
CN402
CN401
SIRCS SIG
SIRCS VCC
TALLY
CN202
D 5V (CN504㉙)
J902 REMOTE
LANC DC
LANC OUT
DD-77 BOARD
CN901
(See Page 4-57)
POWER (DD-77)
CAM DD ON
VTR DD ON
CN504
CN505
IC507 (1/3) LANC I/O
PWR CONT
CURRENT LIMITER
5.6V REG
EVER 3.6V
W500
SL-38 BOARD (1/2)
(See Page 4-43)
POWER CONT
UNREG
WAKE UP
DATA OUT
DATA IN
EVER 3.6V
VTR UNREG (CN504㉞)
09


(See Page 4-43)
A-MECHA CHASSIS
LM-40 BOARD
M903 LOADING MOTOR
SL-38 BOARD (1/2)
(See Page 4-43)
IC507 (1/3)
LOADING MOTOR DRIVE
VCC
DEC2
DEC1
LIMIT ENABLE
LIMIT OUT
OUT2
OUT1
W500
W501
UN LOAD
LOAD
CN501
M SW 0
M SW 1
M SW 2
S001 MODE SWITCH
DEW SENS
R009
DEW SENSOR
CC DOWN
S005 CC DOWN
CN502
TOP SENS
END SENS
D001 TAPE LED
Q001 TAPE TOP SENSER
Q002 TAPE END SENSER
MD SENSER 3.6V
3.6V REG
Q560-562
IC507 (1/3)
WAVE SHAPER
LED DRIVE
S REEL (-)
S REEL (+)
T REEL (+)
T REEL (-)
REEL HALL CONT
T/E LED ON
H001 S REEL
H002 T REEL
ME/MP
MP/H18-MP
REC PROOF
S002
MP/MP-HG
LS-33 BOARD
(See Page 4-43)
IC505
SERVO/SYSTEM CONTROL
UN LOAD
LOAD
LM LIM CONT
LM LIM ON
M SW 0
M SW 1
M SW 2
DEW DET
CC DOWN
D505
TOP SENS
END SENS
Q503
TAPE TOP DETECT
TAPE END DETECT
MT 5V (CN504 (18)(19))
CN505
MTSV (FOR MD 3.6V) (CN504 (9))
PS500
S REEL FG
T REEL FG
SS3.6V (CN504 (33))
T/E LED ON
ME/MP SW
H18 MP SW
REC PROOF SW
HEAD CHG
RP PB MODE
FE ON
ME/MP
RF SWP
VI SWP
VTR SYNC
Q504 LEVEL SHIFT
RP PB MODE
FE ON
ME/MP
RF SWP
JOG
VA PB MODE
V MUTE
PB MIX RF
VIDEO (2)
VI SWP
VTR SYNC
COMP REC
JOG VD
JOG
VA PB MODE
V MUTE
SP/LP
V IN/OUT
VIDEO (1)
S JACK IN
E/L DET
E/L OUT
EDIT
AGC SLOW
SS 3.6V (CN504 (33))
AV REF
VDD
VDD
VPP
X502 11.719MHz
XTAL
EXTAL
3.5Vp-p
11.719MHz
INT VD
IC505 (40) REC/PB
PB V
PB V
CAM VD
FLD
RESET
CS MECHA CON
DATA TO MASTER
DATA TO SLAVE
SCK
IC508
SP/LP DETECT
CLOG DETECT
RF ENV DETECT
SP/LP DET
CLOG DET
RF ENV
Q507 BUFFER
LPF
SS3.6V (CN504 (33))
AVDD
DVDD
CAM/LINE
A MUTE
A IN/OUT
EXT MIC
A MUTE
SP/LP
RF SWP
VA PB MODE
CAM/LINE
A IN/OUT
JOG
CN202
AUDIO (AU-183)
TALLY
EVF (VF-65)
CN206
CAM VD
CS SG
FLD
PB V
CS OSD
ZOOM SW
CAMERA (VC-160)
SYS RESET
DATA TO MSTR
DATA TO SLVE
CS CAM
SCK
CN203
LED DRIVE
501
P ROM
VCC
SS 3.6V (CN504 (33))
LAVE
VIDEO (1)
3Vp-p
10MHz
(3) REC/PB
IC502
3.6V REG
PS501
VTR UNREG (CN504 (34))
EVER 3.6V
D501
UM BATTERY END DETECT

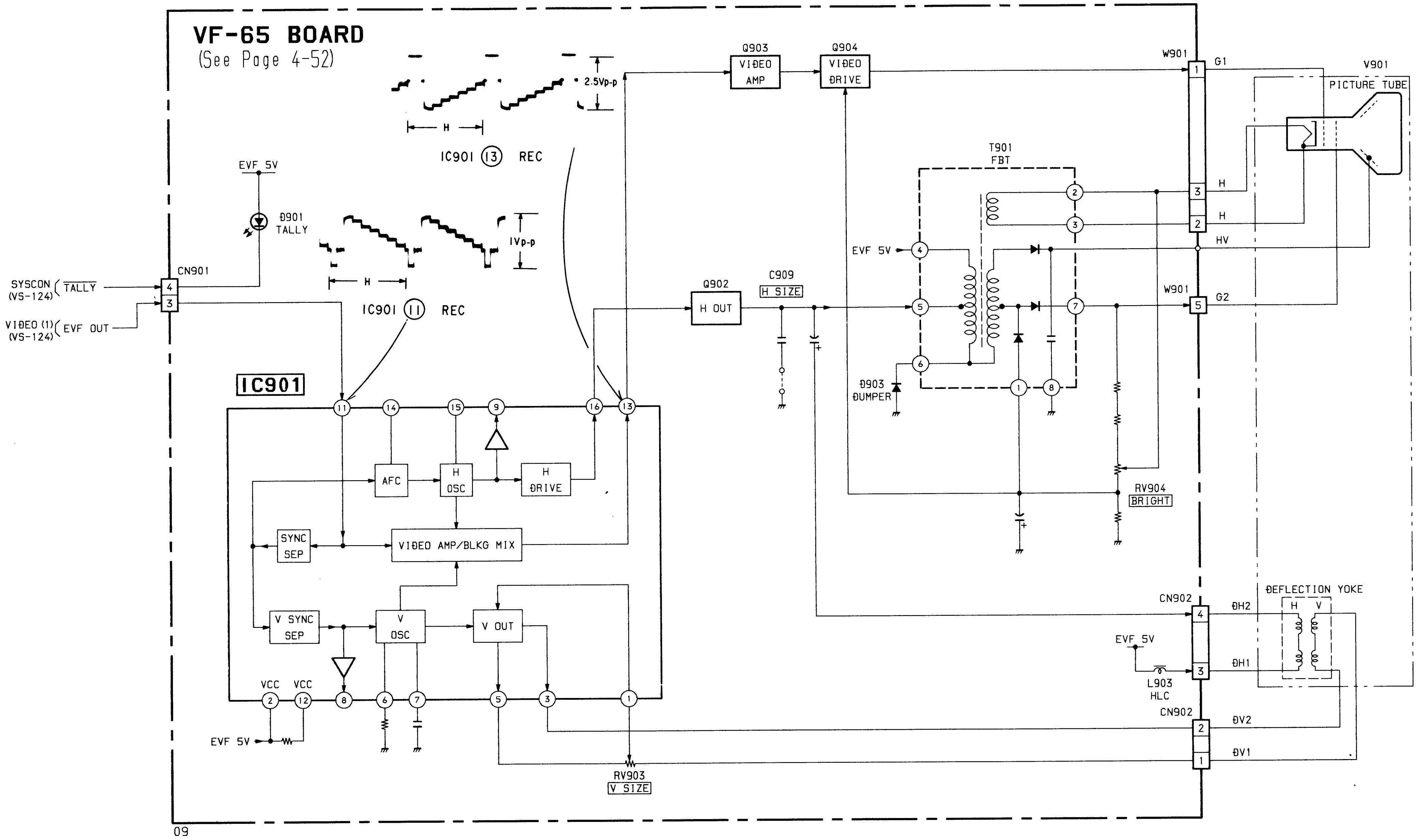
3-7. AUDIO BLOCK DIAGRAM



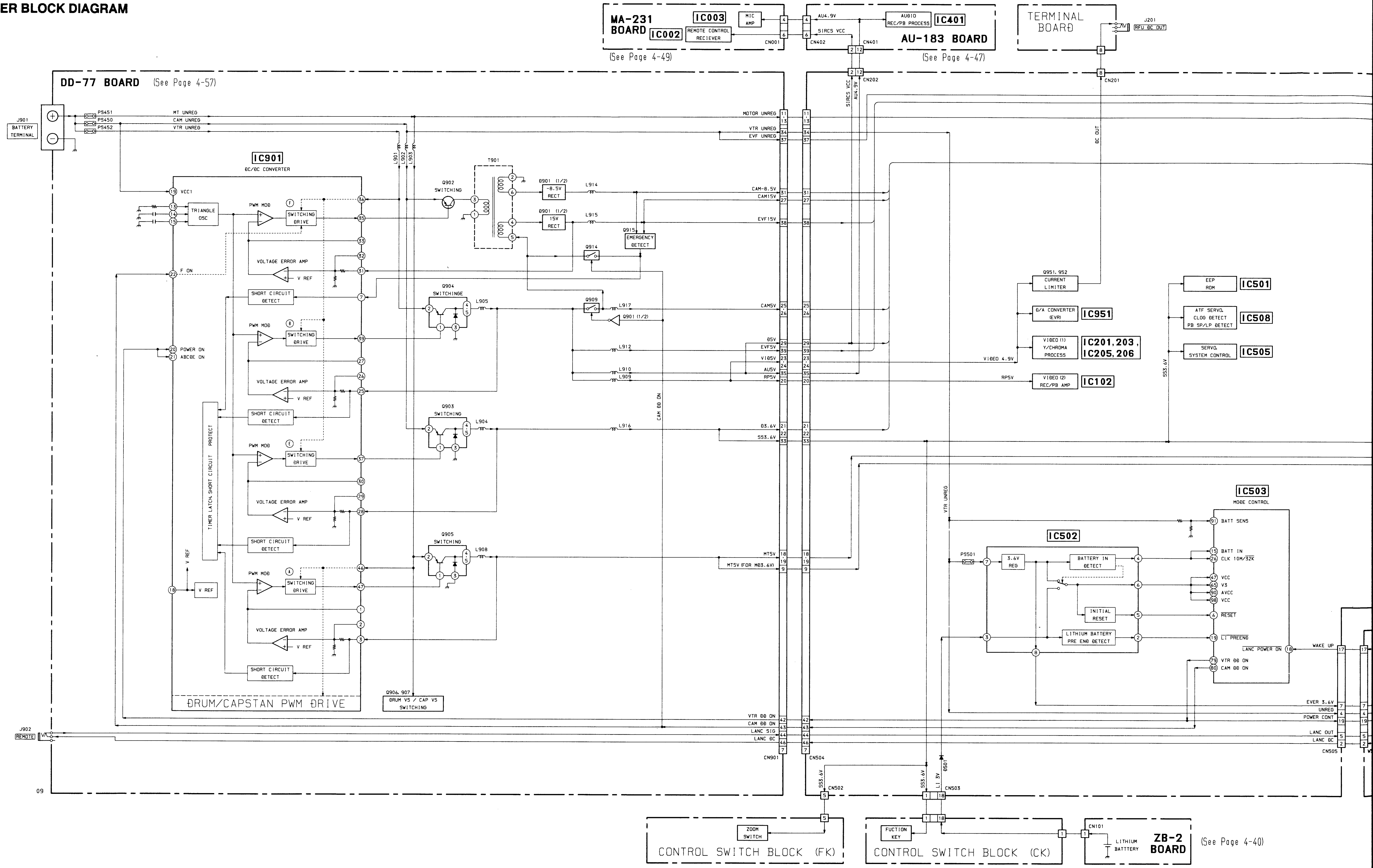
AU-183 BOARD (See Page 4-47)
IC401
AFM PROCESS
RF SWP
VA PB MODE
SP/LP
CAM/LINE
AUDIO FADER
RF AGC
MOD, DEMOD
FILTER
NR
FADE
AGC
CAM
LINE
PB
MUTE
REC
A MUTE
LPF
LPF ON
IR REF
V REF
VCC VCC
AUDIO 4.9V (CN401 ⑫)
CN401
Q404, C416, R412, L401
PB RF
REC AFM RF
VIDEO (2) (VS-124)
AUDIO FADER
1.5M DEV
AU FSC
IR ADJ
VIDEO (1) (VS-124)
09
AU 4.9V (CN401 ⑫)
CN402
SS 4.9V (CN401 ②)
MIC IN
SIRCS VCC
SIRCS SIG
HP L OUT
AUDIO I/O
SIRCS SIG
CAM/LINE
VA PB MODE
SP/LP
A MUTE
SYSTEM CONTROL (VS-124)
RF SWP
SERVO (VS-124)
MA-231 BOARD (See Page 4-49)
IC003
MIC AMP
CN001
EXT VCC
VCC
MIC VCC
MIC AMP
MIC VCC
MIC SIG
IC002
VCC
R OUT
SIRCS
Q002
FILTER
CN003
VS-124 BOARD See Page 4-34, 4-37)
CN202
CN201
CN504
TERMINAL BOARD
CN901
J903
EARPHONE
DD-77 BOARD (See Page 4-57)

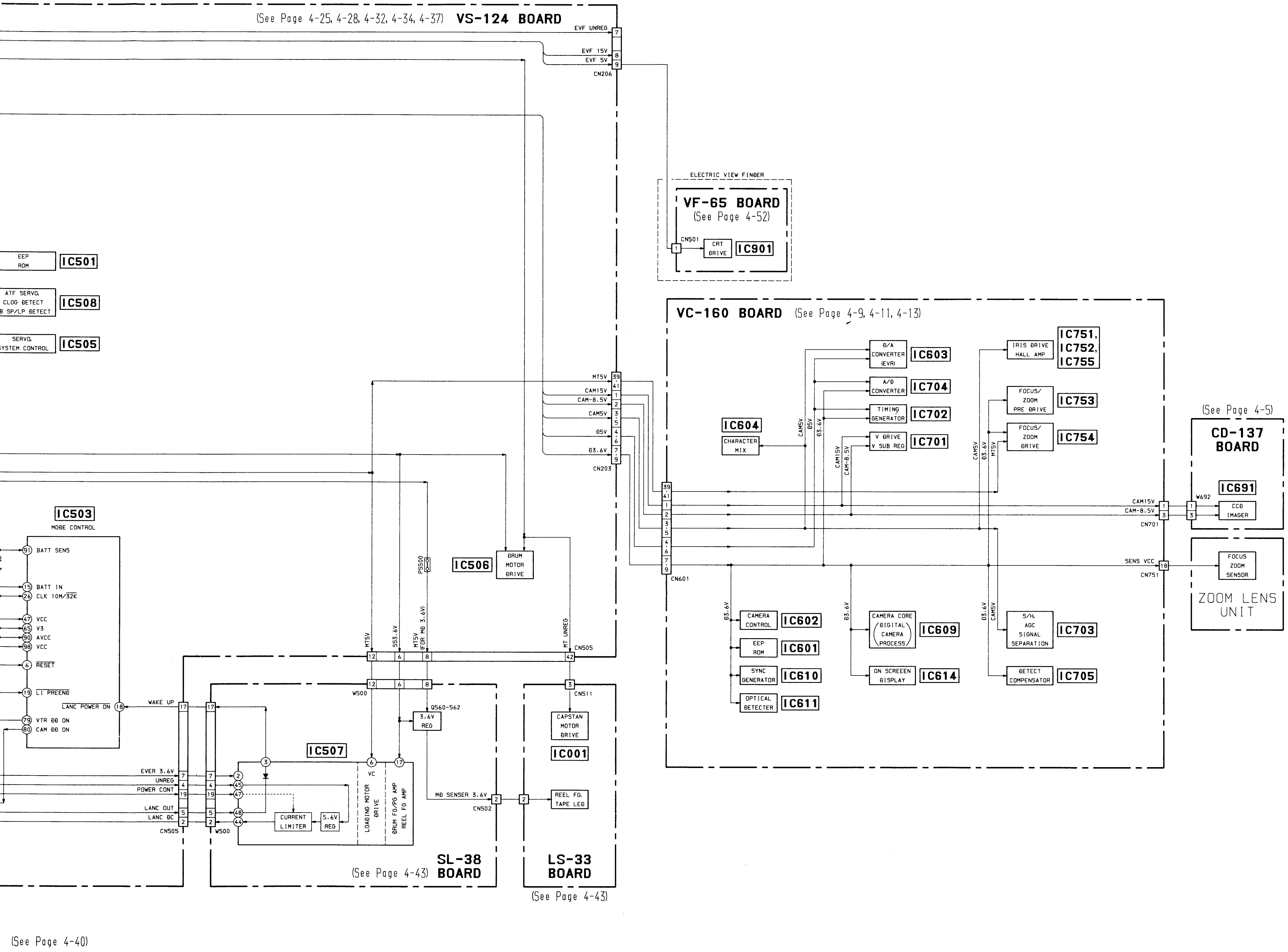

OARD (See Page 4-49)
CC 2
CC 1
5
MIC VCC
MIC SIG
J001
EXT/MIC
Q002
FILTER
1
CN003
MIC
M003
IRCS
124
RD
4-34,
4-37)
CN201
10
10
TERMINAL
BOARD
J201
AUDIO
J903
EARPHONE
D-77 BOARD
(See Page 4-57)

3-8. B/W EVF BLOCK DIAGRAM


VF-65 BOARD
(See Page 4-52)
2.5Vp-p
H
IC901 13 REC
IVp-p
H
IC901 11 REC
EVF 5V
D901
TALLY
CN901
SYSCON (VS-124)
TALLY
VIDEO (1) (VS-124)
EVF OUT
4
3
IC901
11
14
15
9
16
13
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
2
12
8
6
7
5
3
1
EVF 5V
RV903
V SIZE
Q903
VIDEO AMP
Q904
VIDEO DRIVE
Q902
H OUT
C909
H SIZE
T901
FBT
EVF 5V
4
5
6
2
3
7
1
8
D903
DUMPER
RV904
BRIGHT
W901
1
3
2
5
G1
H
H
HV
G2
V901
PICTURE TUBE
CN902
4
3
2
1
EVF 5V
L903
HLC
DH2
DH1
DV2
DV1
DEFLECTION YOKE
H
V
09

3-9. POWER BLOCK DIAGRAM

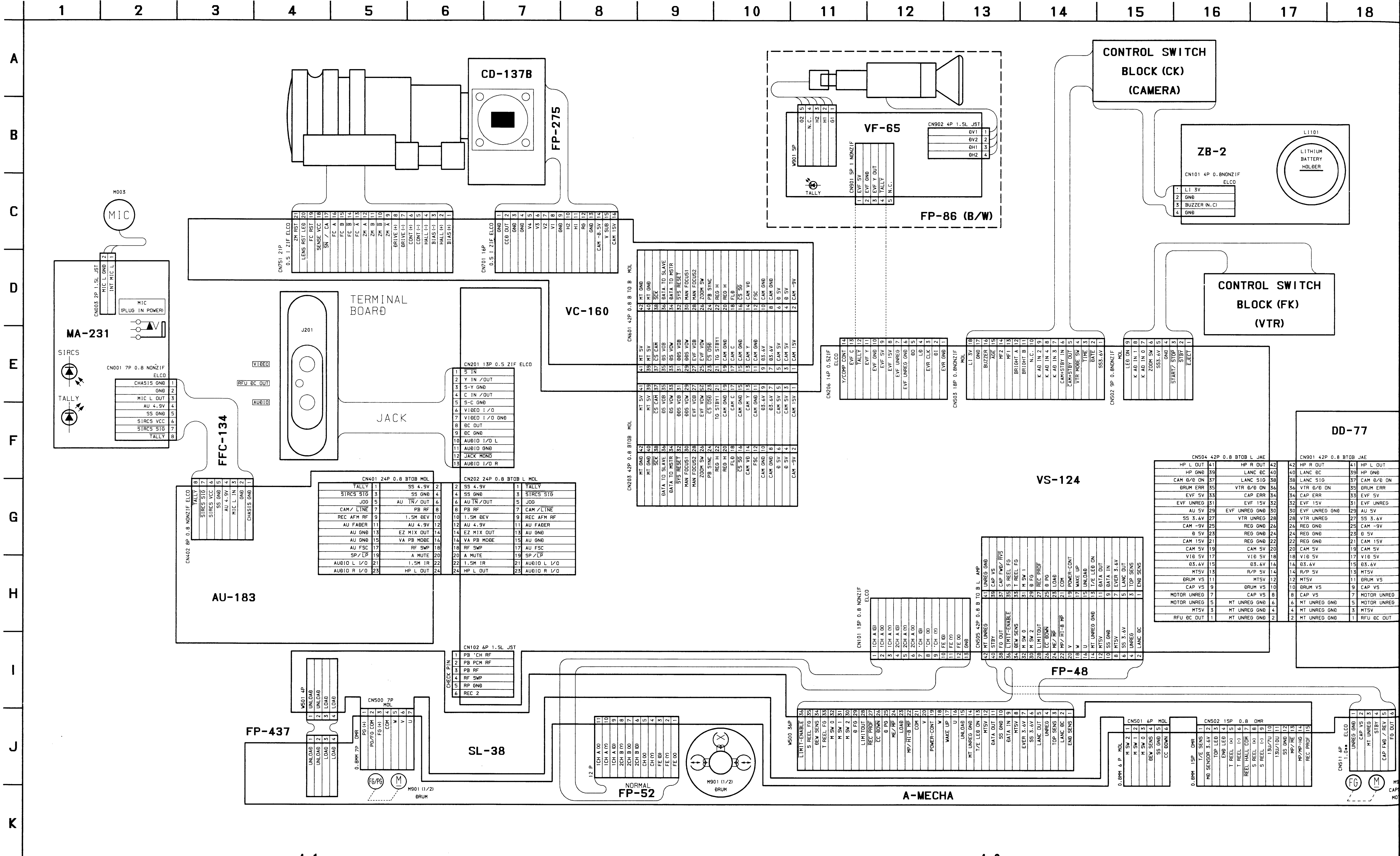

MA-231 BOARD
IC003
IC002
REMOTE CONTROL RECIEVER
MIC AMP
CN001
(See Page 4-49)
AU-183 BOARD
AU4.9V
SIRCS VCC
AUDIO REC/PB PROCESS
IC401
CN402
CN401
(See Page 4-47)
TERMINAL BOARD
J201
RFU DC OUT
DD-77 BOARD (See Page 4-57)
J901
BATTERY TERMINAL
PS451
PS450
PS452
MT UNREG
CAM UNREG
VTR UNREG
MOTOR UNREG
VTR UNREG
EVF UNREG
IC901
DC/DC CONVERTER
VCC1
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF
SHORT CIRCUIT DETECT
F ON
POWER ON
ABCDE ON
TIMER LATCH SHORT CIRCUIT PROTECT
V REF
DRUM/CAPSTAN PWM DRIVE
L901
L902
L903
Q902
SWITCHING
T901
D901 (1/2)
-8.5V RECT
15V RECT
L914
L915
Q915
EMERGENCY DETECT
Q914
Q904
SWITCHINGE
L905
Q909
L917
D901 (1/2)
L912
L910
L909
Q903
SWITCHING
L904
L916
Q905
SWITCHING
L908
Q906, 907
DRUM VS / CAP VS SWITCHING
CAM DD ON
CAM-8.5V
CAM15V
EVF15V
CAM5V
D5V
EVF5V
VIO5V
AU5V
RP5V
D3.6V
SS3.6V
MT5V
MT5V (FOR MD3.6V)
VTR DD ON
CAM DD ON
LANC SIG
LANC DC
CN901
J902
REMOTE
CN202
SIRCS VCC
AU4.9V
CN201
DC OUT
Q951, 952
CURRENT LIMITER
D/A CONVERTER (EVR)
IC951
VIDEO (1) Y/CHROMA PROCESS
IC201,203, IC205,206
VIDEO 4.9V
RP5V
VIDEO (2) REC/PB AMP
IC102
EEP ROM
IC501
ATF SERVO, CLOG DETECT PB SP/LP DETECT
IC508
SERVO, SYSTEM CONTROL
IC505
SS3.6V
VTR UNREG
IC503
MODE CONTROL
BATT SENS
BATT IN
CLK 10M/32K
VCC
V3
AVCC
VCC
RESET
LI PREEND
LANC POWER ON
VTR DD ON
CAM DD ON
IC502
PS501
3.6V REG
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
WAKE UP
EVER 3.6V
UNREG
POWER CONT
LANC OUT
LANC DC
CN505
CN504
SS3.6V
CN502
SS3.6V
LI 3V
D501
CN503
ZOOM SWITCH
CONTROL SWITCH BLOCK (FK)
FUCTION KEY
CONTROL SWITCH BLOCK (CK)
CN101
LITHIUM BATTERY
ZB-2 BOARD
(See Page 4-40)
09

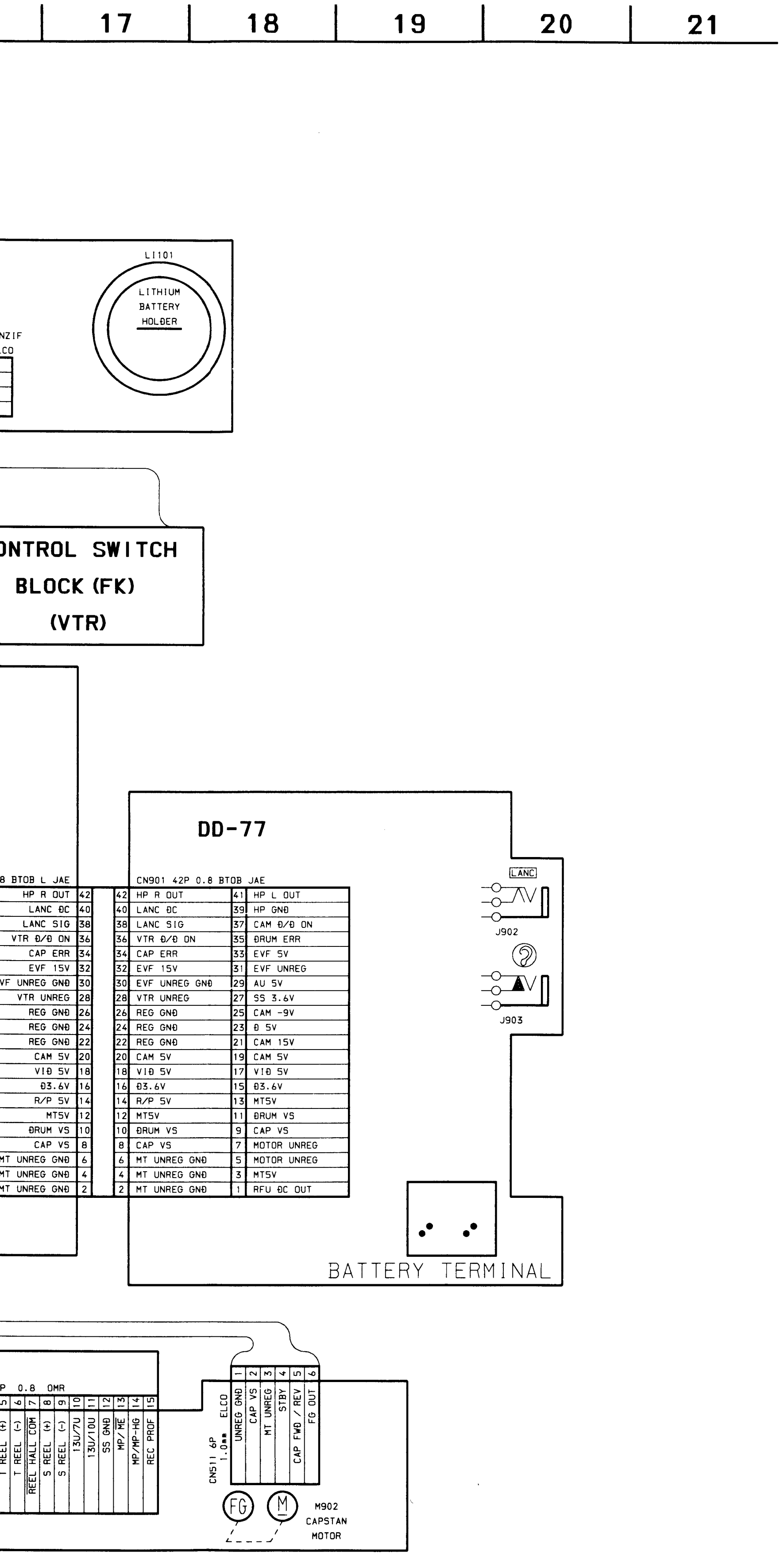

(See Page 4-25, 4-28, 4-32, 4-34, 4-37) VS-124 BOARD
EVF UNREG
EVF 15V
EVF 5V
CN206
ELECTRIC VIEW FINDER
VF-65 BOARD
(See Page 4-52)
CN501
CRT DRIVE
IC901
EEP ROM
IC501
ATF SERVO, CLOG DETECT SP/LP DETECT
IC508
SERVO, SYSTEM CONTROL
IC505
VC-160 BOARD (See Page 4-9, 4-11, 4-13)
D/A CONVERTER (EVR)
IC603
A/D CONVERTER
IC704
TIMING GENERATOR
IC702
V DRIVE V SUB REG
IC701
IC604
CHARACTER MIX
IRIS DRIVE HALL AMP
IC751, IC752, IC755
FOCUS/ ZOOM PRE DRIVE
IC753
FOCUS/ ZOOM DRIVE
IC754
CAM5V
D5V
D3.6V
CAM15V
CAM-8.5V
MT5V
CAMERA CONTROL
IC602
EEP ROM
IC601
SYNC GENERATOR
IC610
OPTICAL DETECTER
IC611
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC609
ON SCREEN DISPLAY
IC614
S/H AGC SIGNAL SEPARATION
IC703
DETECT COMPENSATOR
IC705
CN601
CN701
CN751
SENS VCC
(See Page 4-5)
CD-137 BOARD
IC691
W692
CCD IMAGER
FOCUS ZOOM SENSOR
ZOOM LENS UNIT
MT5V
CAM15V
CAM-8.5V
CAM5V
D5V
D3.6V
CN203
IC503
MODE CONTROL
BATT SENS
BATT IN
CLK 10M/32K
VCC
V3
AVCC
VCC
RESET
LI PREEND
LANC POWER ON
VTR DD ON
CAM DD ON
WAKE UP
IC506
DRUM MOTOR DRIVE
PS500
MT5V
SS3.6V
MT5V (FOR MD 3.6V)
MT UNREG
CN505
W500
Q560-562
3.6V REG
IC507
VC
LOADING MOTOR DRIVE
DRUM FG/PG AMP
REEL FG AMP
CURRENT LIMITER
5.6V REG
EVER 3.6V
UNREG
POWER CONT
LANC OUT
LANC DC
CN505
W500
MD SENSER 3.6V
CN502
CN511
CAPSTAN MOTOR DRIVE
IC001
REEL FG, TAPE LED
SL-38
(See Page 4-43) BOARD
LS-33 BOARD
(See Page 4-43)
(See Page 4-40)

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
CD-137B
FP-275
VF-65
FP-86 (B/W)
CONTROL SWITCH BLOCK (CK) (CAMERA)
ZB-2
LI101 LITHIUM BATTERY HOLDER
CONTROL SWITCH BLOCK (FK) (VTR)
M003
MIC
MA-231
SIRCS
TALLY
FFC-134
TERMINAL BOARD
J201
VIDEO
RFU DC OUT
AUDIO
JACK
VC-160
AU-183
VS-124
DD-77
FP-48
FP-437
SL-38
NORMAL FP-52
M901 (1/2) DRUM
A-MECHA
CN751 21P 0.5 1 ZIF ELCO
CN701 16P 0.5 1 ZIF ELCO
CN601 42P 0.8 B TO B MOL
CN203 42P 0.8 BTOB MOL
CN003 2P 1.5L JST
CN001 7P 0.8 NONZIF ELCO
CN402 8P 0.8 NONZIF ELCO
CN401 24P 0.8 BTOB MOL
CN201 13P 0.5 ZIF ELCO
CN202 24P 0.8 BTOB L MOL
CN102 6P 1.5L JST
CHECK PIN
W501 4P
CN500 7P MOL
W500 36P
CN206 14P 0.5ZIF ELCO
CN503 18P 0.8NONZIF MOL
CN502 9P 0.8NONZIF MOL
CN101 13P 0.8 NONZIF ELCO
CN505 42P 0.8 TO B L AMP
CN504 42P 0.8 BTOB L JAE
CN901 42P 0.8 BTOB JAE
CN902 4P 1.5L JST
CN901 5P 1 NONZIF
W901 5P
CN101 4P 0.8NONZIF ELCO
CN501 6P MOL
CN502 15P 0.8 OMR
CN511 6P 1.0
FG
M


17
18
19
20
21
L1101
LITHIUM BATTERY HOLDER
NZIF
ELCO
ONTROL SWITCH BLOCK (FK) (VTR)
DD-77
8 BTOB L JAE
CN901 42P 0.8 BTOB JAE
42 HP R OUT
41 HP L OUT
40 LANC DC
39 HP GND
38 LANC SIG
37 CAM D/D ON
36 VTR D/D ON
35 DRUM ERR
34 CAP ERR
33 EVF 5V
32 EVF 15V
31 EVF UNREG
30 EVF UNREG GND
29 AU 5V
28 VTR UNREG
27 SS 3.6V
26 REG GND
25 CAM -9V
24 REG GND
23 D 5V
22 REG GND
21 CAM 15V
20 CAM 5V
19 CAM 5V
18 VID 5V
17 VID 5V
16 D3.6V
15 D3.6V
14 R/P 5V
13 MT5V
12 MT5V
11 DRUM VS
10 DRUM VS
9 CAP VS
8 CAP VS
7 MOTOR UNREG
6 MT UNREG GND
5 MOTOR UNREG
4 MT UNREG GND
3 MT5V
2 MT UNREG GND
1 RFU DC OUT
LANC
J902
J903
BATTERY TERMINAL
P 0.8 OMR
T REEL (+)
T REEL (-)
REEL HALL COM
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
MP/ME
MP/MP-HG
REC PROF
CN511 6P 1.0mm ELCO
UNREG GND
CAP VS
MT UNREG
STBY
CAP FWD / REV
FG OUT
FG
M
M902 CAPSTAN MOTOR

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ○: Through hole .

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W or 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- —▭— : nonflammable resistor.
- —▭— : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.*
- ━━ : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

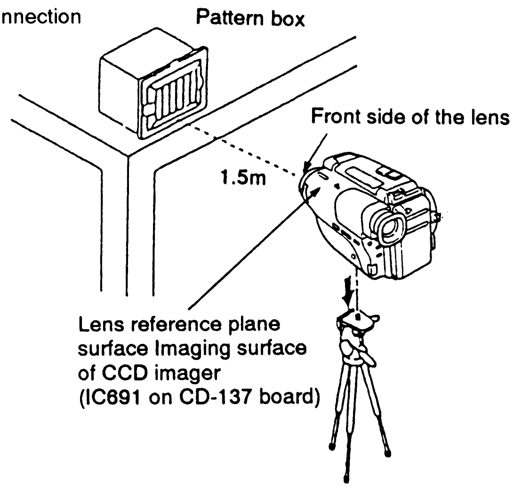
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC mode)

- The object is color bar chart of pattern box.*
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC691 on CD-137 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

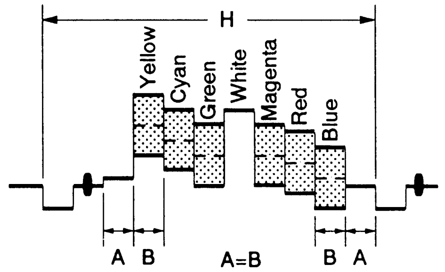

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

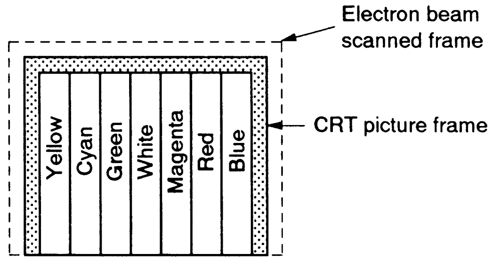

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

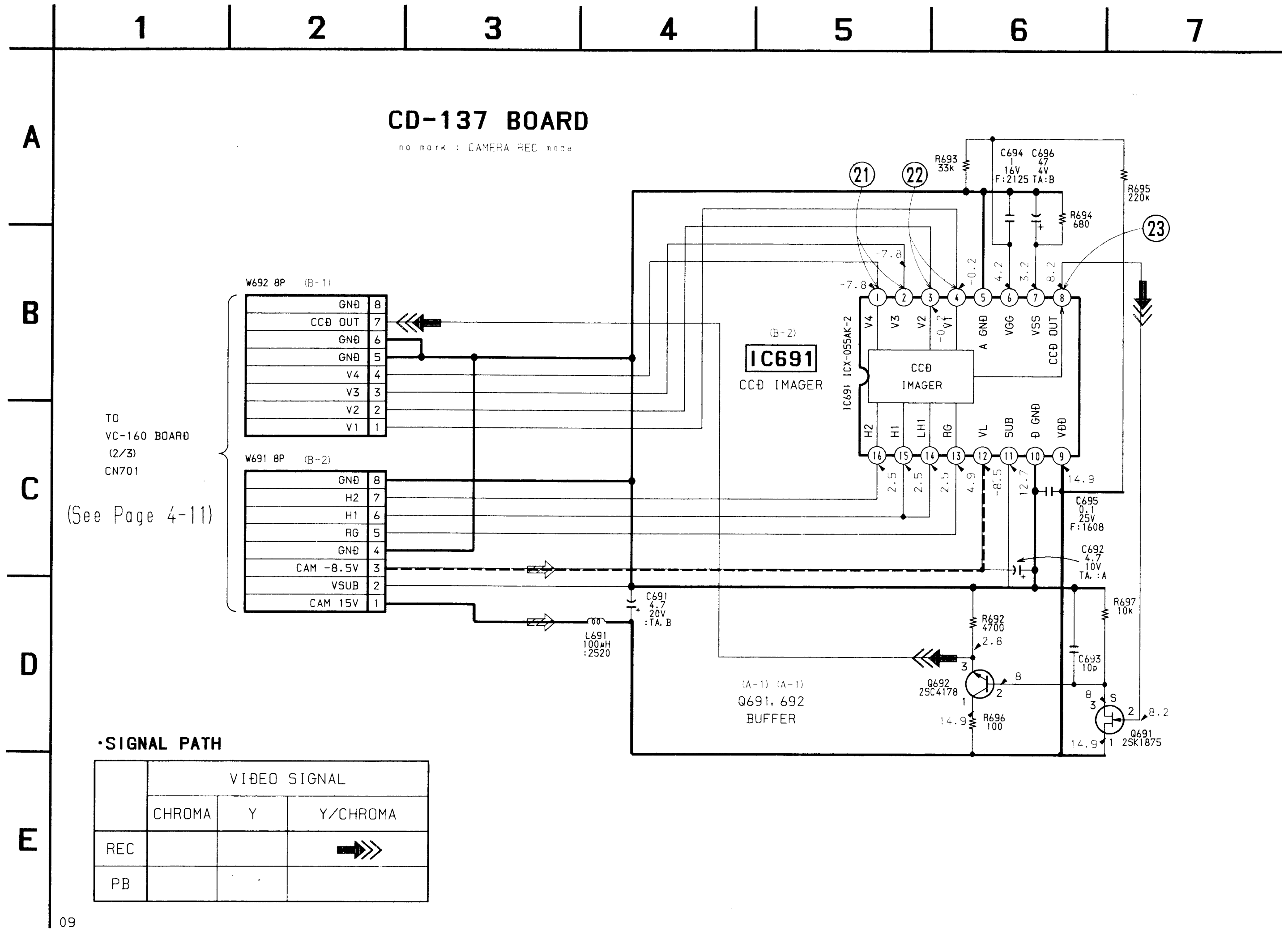
(REC/PB mode)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Note: Refer to "3-1-3. Connecting the Equipments" in VIDEO SECTION ADJUSTMENT. (See Page 6-31).

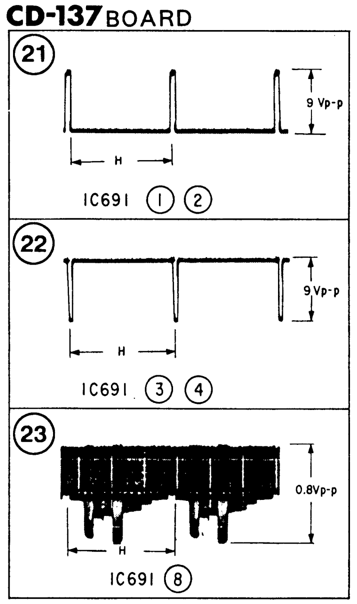
CD-137 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-137 BOARD: 1,000 series —


1
2
3
4
5
6
7
A
B
C
D
E
CD-137 BOARD
no mark : CAMERA REC mode
W692 8P (B-1)
GND 8
CCD OUT 7
GND 6
GND 5
V4 4
V3 3
V2 2
V1 1
TO
VC-160 BOARD
(2/3)
CN701
(See Page 4-11)
W691 8P (B-2)
GND 8
H2 7
H1 6
RG 5
GND 4
CAM -8.5V 3
VSUB 2
CAM 15V 1
(B-2)
IC691
CCD IMAGER
IC691 ICX-055AK-2
CCD
IMAGER
V4
V3
V2
V1
A GND
VGG
VSS
CCD OUT
H2
H1
LH1
RG
VL
SUB
D GND
VDD
21
22
23
R693
33k
C694
1
16V
F:2125
C696
47
4V
TA:B
R695
220k
R694
680
-7.8
-7.8
-0.2
-0.2
4.2
3.2
8.2
2.5
2.5
2.5
4.9
-8.5
12.7
14.9
C695
0.1
25V
F:1608
C692
4.7
10V
TA. :A
R697
10k
C691
4.7
20V
:TA. B
L691
100μH
:2520
R692
4700
2.8
(A-1) (A-1)
Q691, 692
BUFFER
Q692
2SC4178
8
C693
10p
R696
100
14.9
Q691
2SK1875
8.2
14.9
09

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡≫
PB			

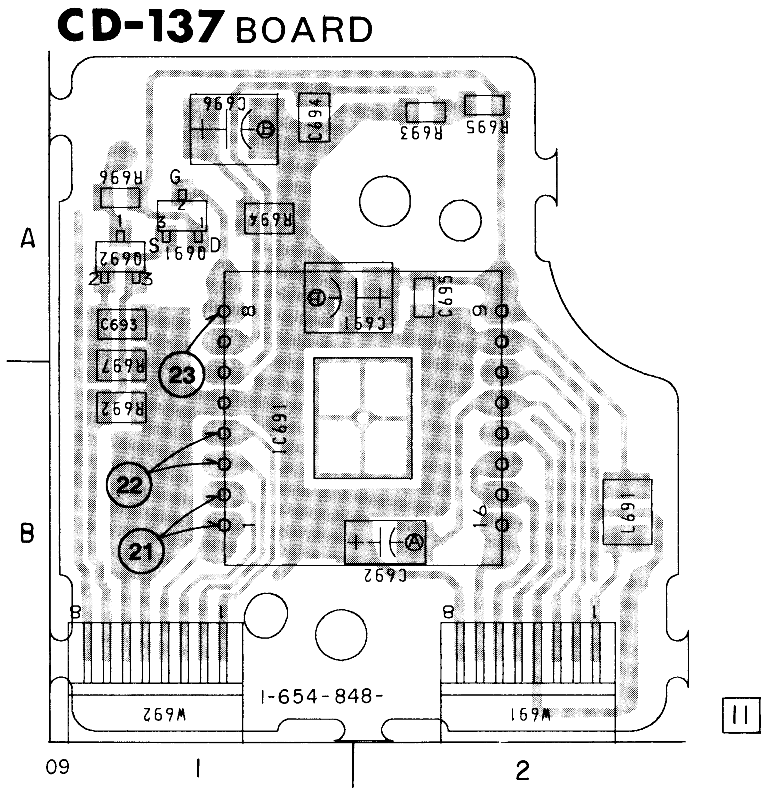


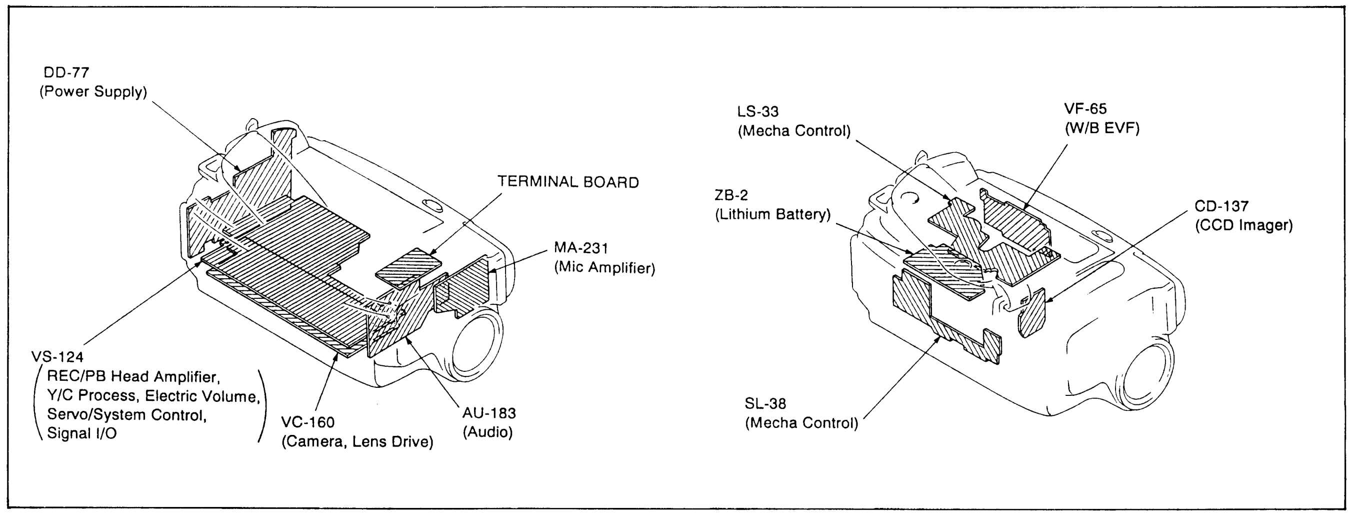
Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-137 board supplied as the repair parts.
  When replacing the CD-137 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-137 (CCD IMAGER) PRINTED WIRING BOARD

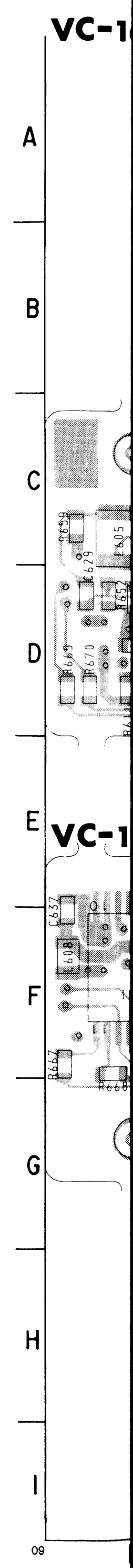
— Ref. No. CD-137 BOARD: 1,000 series —


CD-137 BOARD
A
B
C696
C694
R693
R695
R696
G
R694
1
2
3
C690
S
Q690
D
C691
C695
C693
R692
R697
23
22
21
IC691
8
9
16
1
L691
C692
A
8
1
8
1
1-654-848-
W692
W691
11
09
1
2


DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)
LS-33
(Mecha Control)
VF-65
(W/B EVF)
ZB-2
(Lithium Battery)
CD-137
(CCD Imager)
SL-38
(Mecha Control)

VC-160 (C

— Ref. No. VC


VC-1
A
B
C
D
E
VC-1
F
G
H
I
09

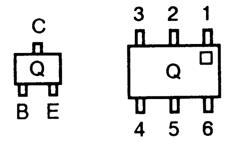
VC-160 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-160 BOARD: 2,000 series —

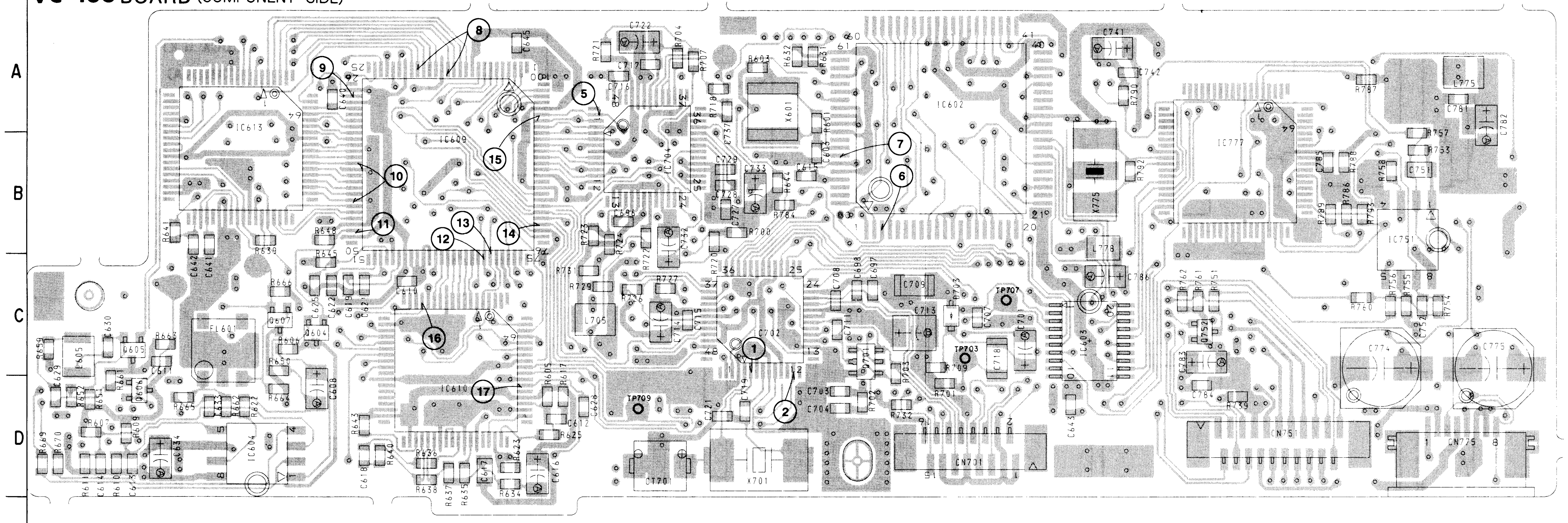
- **For printed wiring boards.**
- VS-160 board is a four-layer printed board. However, the patterns of layers **2** to **3** have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- **Chip transistor**


C
Q
B E
3 2 1
Q
4 5 6

VC-160 BOARD (COMPONENT SIDE)


A
B
C
D
IC613
IC609
IC610
IC604
IC602
IC777
IC751
IC603
X601
X701
X725
FL601
CN701
CN751
CN775
TP707
TP703
TP709
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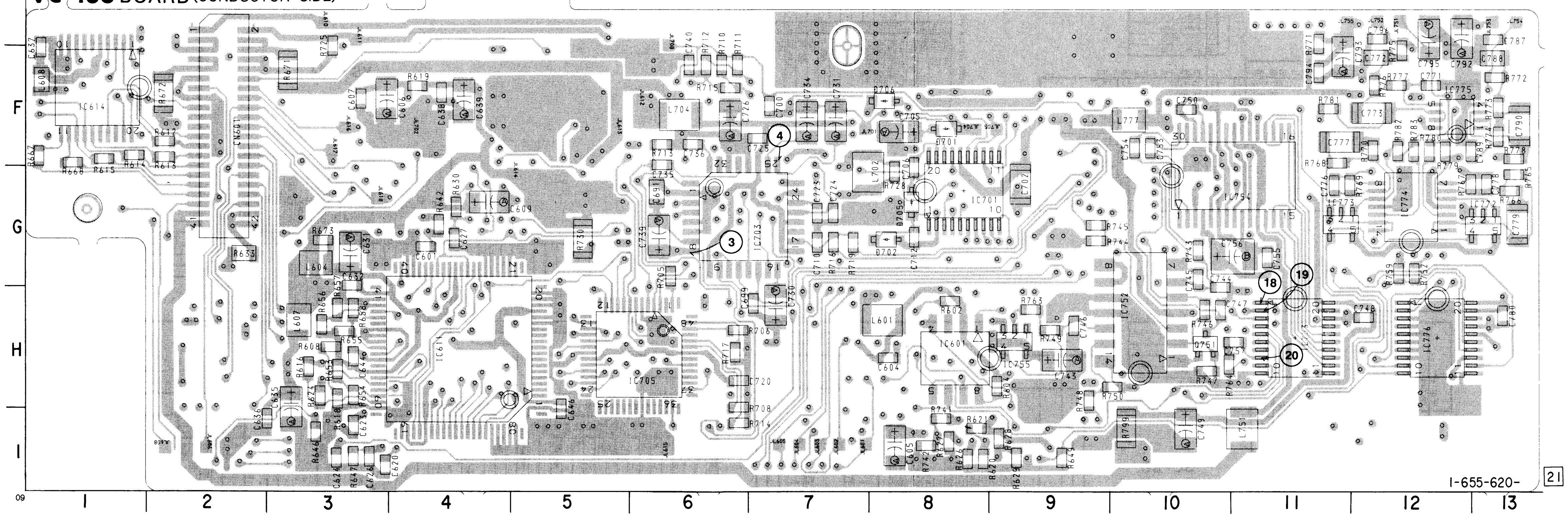
16
17

VC-160 BOARD (CONDUCTOR SIDE)

CD-137
(CCD Imager)


E
F
G
H
I
IC614
CN601
IC703
IC701
IC705
IC601
IC611
IC755
IC754
IC775
IC776
3
4
18
19
20
1-655-620-
21
09
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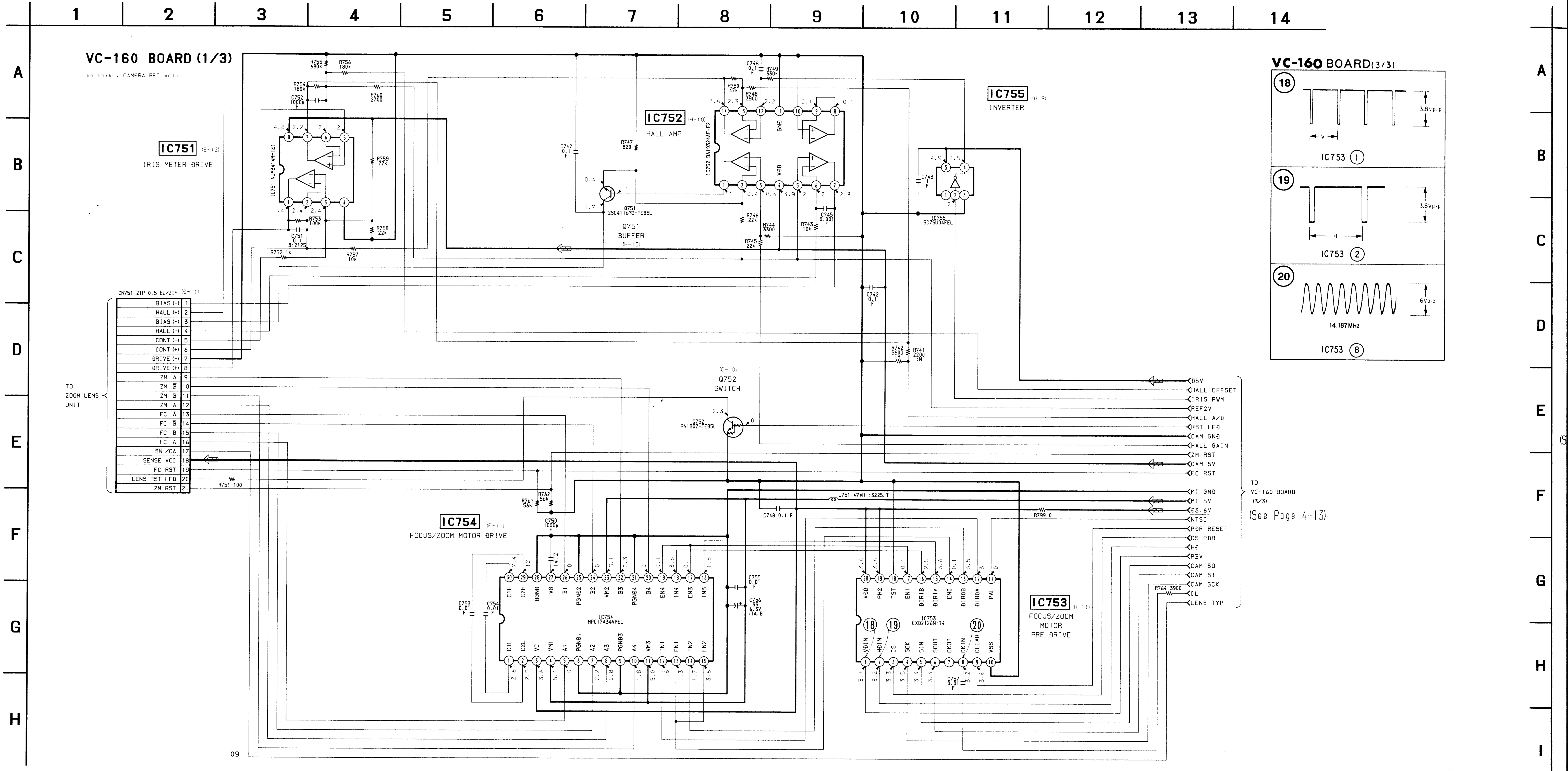
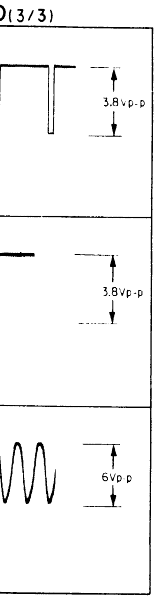
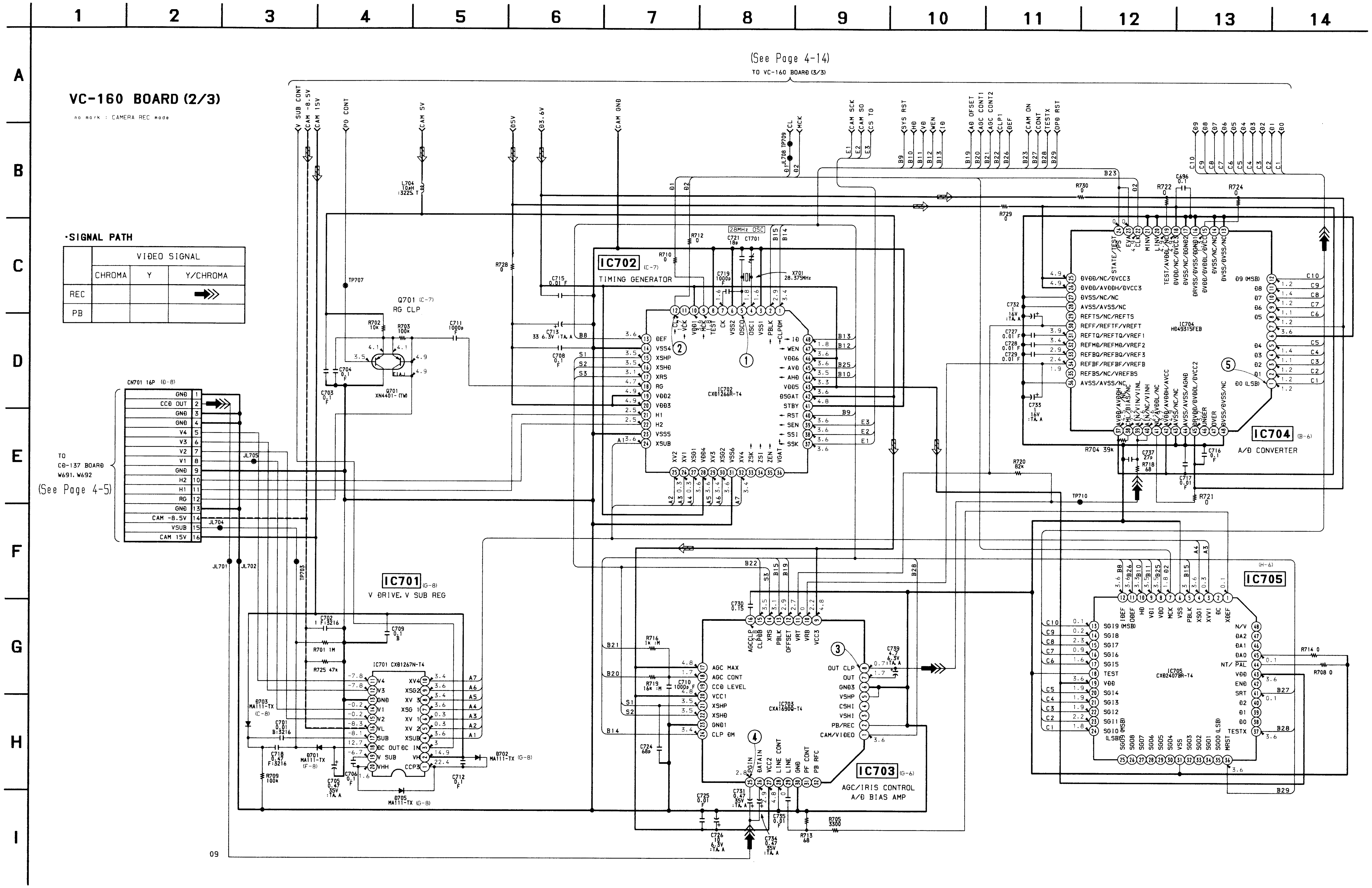
13


VC-160 BOARD (1/3)
no mark : CAMERA REC mode
IC751 (B-12)
IRIS METER DRIVE
IC751 NJM3414M-TE1
IC752 (H-10)
HALL AMP
IC752 BA10324AF-E2
Q751 2SC4116YG-TE85L
Q751 BUFFER (H-10)
IC755 (H-9)
INVERTER
IC755 SC7SU04FEL
CN751 21P 0.5 EL/ZIF (D-11)
BIAS (+)
HALL (+)
BIAS (-)
HALL (-)
CONT (-)
CONT (+)
DRIVE (-)
DRIVE (+)
ZM A
ZM B
ZM B
ZM A
FC A
FC B
FC B
FC A
SN /CA
SENSE VCC
FC RST
LENS RST LED
ZM RST
TO ZOOM LENS UNIT
R751 100
(C-10)
Q752 SWITCH
Q752 RN1302-TE85L
IC754 (F-11)
FOCUS/ZOOM MOTOR DRIVE
IC754 MPC17A34VMEL
C1H C2H DGND VG B1 PGND2 B2 VM2 B3 PGND4 B4 EN4 IN4 EN3 IN3
C1L C2L VC VM1 A1 PGND1 A2 A3 PGND3 A4 VM3 IN1 EN1 IN2 EN2
IC753 (H-11)
FOCUS/ZOOM MOTOR PRE DRIVE
IC753 CXD2126N-T4
VDD PH2 TST EN1 DIR1B DIR1A EN0 DIR0B DIR0A PAL
VDIN HDIN CS SCK SIN SOUT CKOT CKIN CLEAR VSS
L751 47µH :3225 T
C748 0.1 F
R799 0
R764 3900
D5V
HALL OFFSET
IRIS PWM
REF2V
HALL A/D
RST LED
CAM GND
HALL GAIN
ZM RST
CAM 5V
FC RST
MT GND
MT 5V
D3.6V
NTSC
POR RESET
CS POR
HD
PBV
CAM SO
CAM SI
CAM SCK
CL
LENS TYP
TO VC-160 BOARD (3/3)
(See Page 4-13)
VC-160 BOARD(3/3)
⑱ IC753 ① 3.8Vp-p V
⑲ IC753 ② 3.8Vp-p H
⑳ IC753 ⑧ 6Vp-p 14.187MHz
09

VC-160 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-160 BOARD: 2,000 series —


(3/3)
3.8Vp-p
3.8Vp-p
6Vp-p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A
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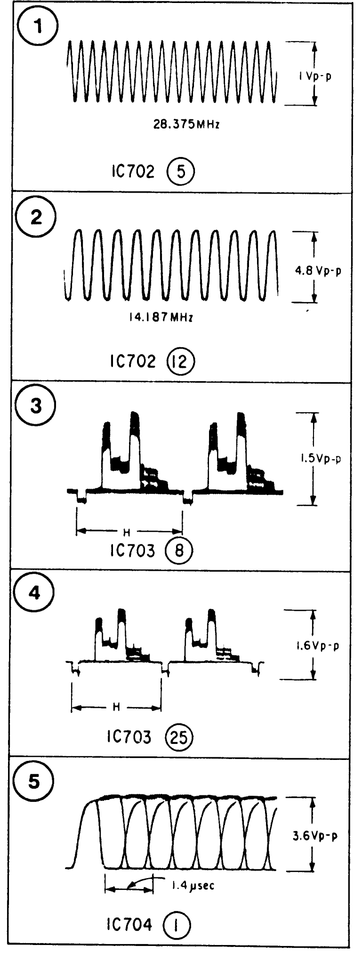
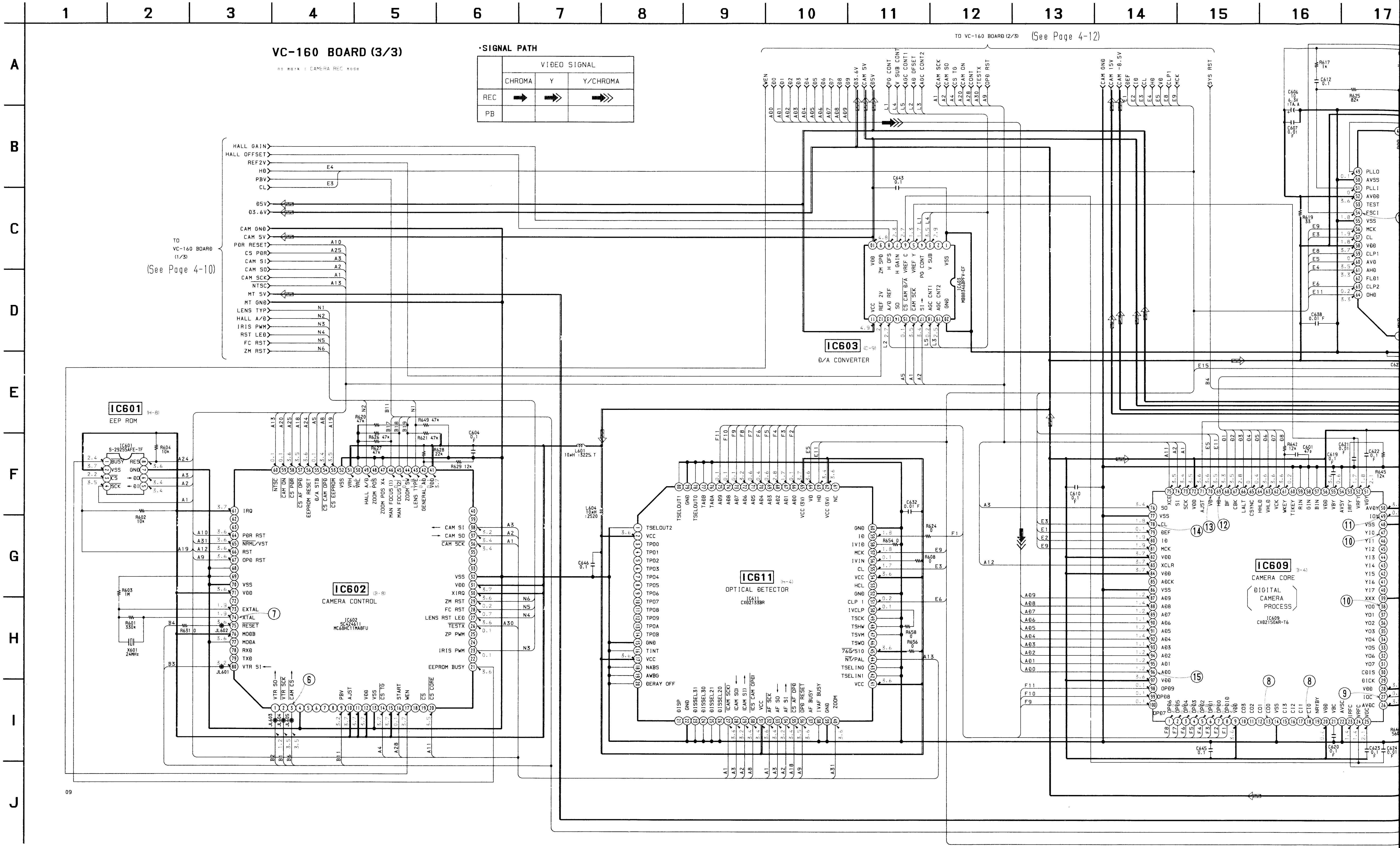
C
D
E
F
G
H
I
VC-160 BOARD (2/3)
no mark : CAMERA REC mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
(See Page 4-14)
TO VC-160 BOARD (3/3)
TO
CD-137 BOARD
W691, W692
(See Page 4-5)
CN701 16P
CCD OUT
V SUB CONT
CAM -8.5V
CAM 15V
PD CONT
CAM 5V
D5V
D3.6V
CAM GND
CAM SCK
CAM SO
CS TO
SYS RST
AD OFSET
AGC CONT1
AGC CONT2
CLP1
DEF
CAM ON
CONT
TESTX
DPB RST
IC702
TIMING GENERATOR
CXD1266R-T4
28MHz OSC
X701
28.375MHz
Q701
RG CLP
XN4401-(TW)
IC701
V DRIVE, V SUB REG
CXD1267N-T4
IC703
AGC/IRIS CONTROL
A/D BIAS AMP
CXA1690Q-T4
IC704
A/D CONVERTER
HD49315FEB
IC705
CXD2407BR-T4
D702
MA111-TX
D703
MA111-TX
D701
MA111-TX
D705
MA111-TX
TP707
TP703
TP710
JL701
JL702
JL704
JL705
09



VC-160 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-160 BOARD: 2,000 series —

- Refer to page 4-7 for Printed Wiring Board.


VC-160 BOARD (3/3)
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TO VC-160 BOARD (2/3) (See Page 4-12)
TO VC-160 BOARD (1/3) (See Page 4-10)
HALL GAIN
HALL OFFSET
REF2V
HD
PBV
CL
CAM GND
CAM 5V
PDR RESET
CS PDR
CAM SI
CAM SO
CAM SCK
NTSC
MT 5V
MT GND
LENS TYP
HALL A/D
IRIS PWM
RST LED
FC RST
ZM RST
IC601
EEP ROM
S-29255AFE-TF
IC602
CAMERA CONTROL
SC424611
MC68HC11MA8FU
X601
24MHz
IC603
D/A CONVERTER
MB88346BPFV-EF
IC611
OPTICAL DETECTOR
CXD2133BR
IC609
CAMERA CORE
DIGITAL CAMERA PROCESS
CXD2150AR-T6
L601
10uH
L604
10uH
1
2
3
4
5
6
7
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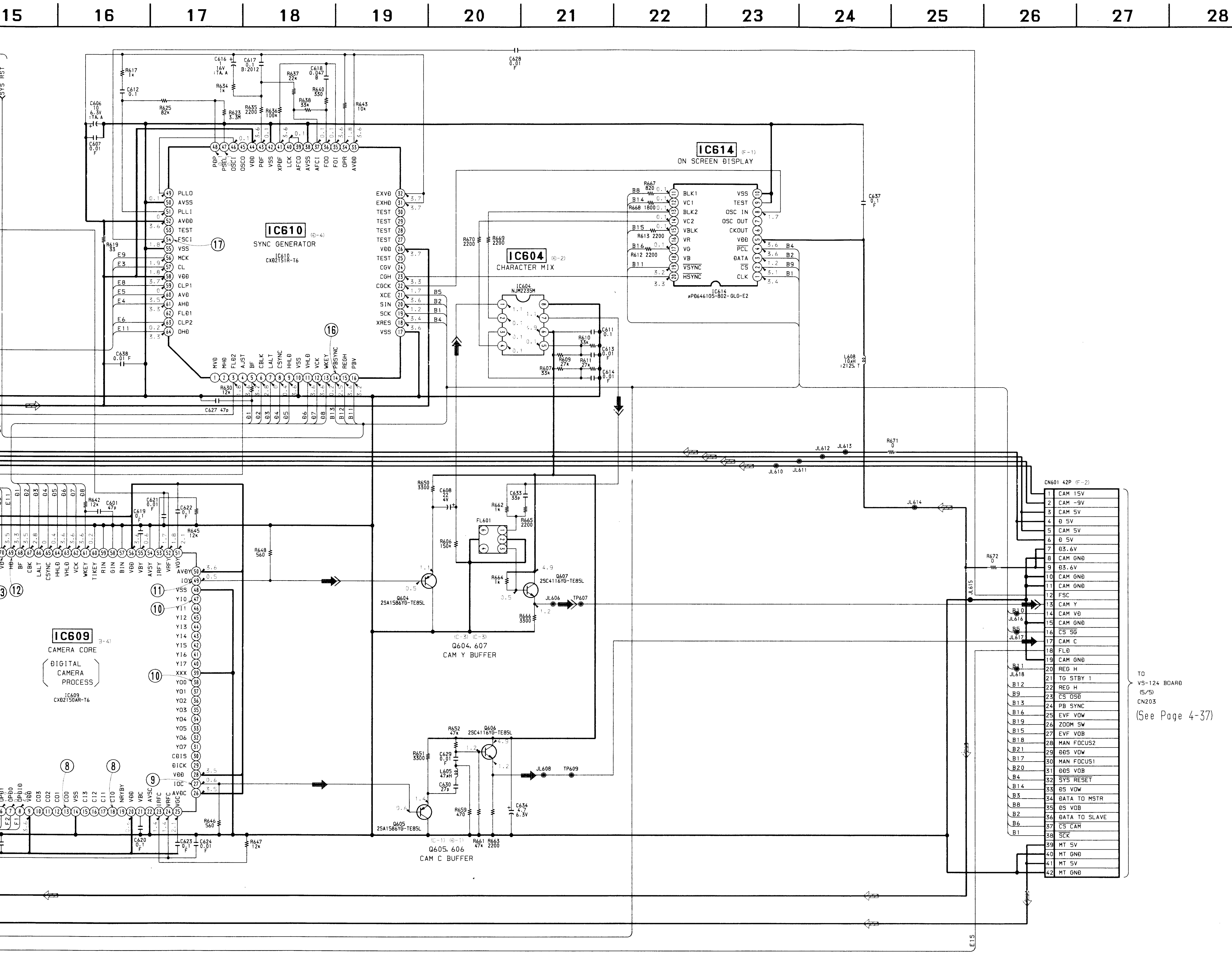
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
09


15
16
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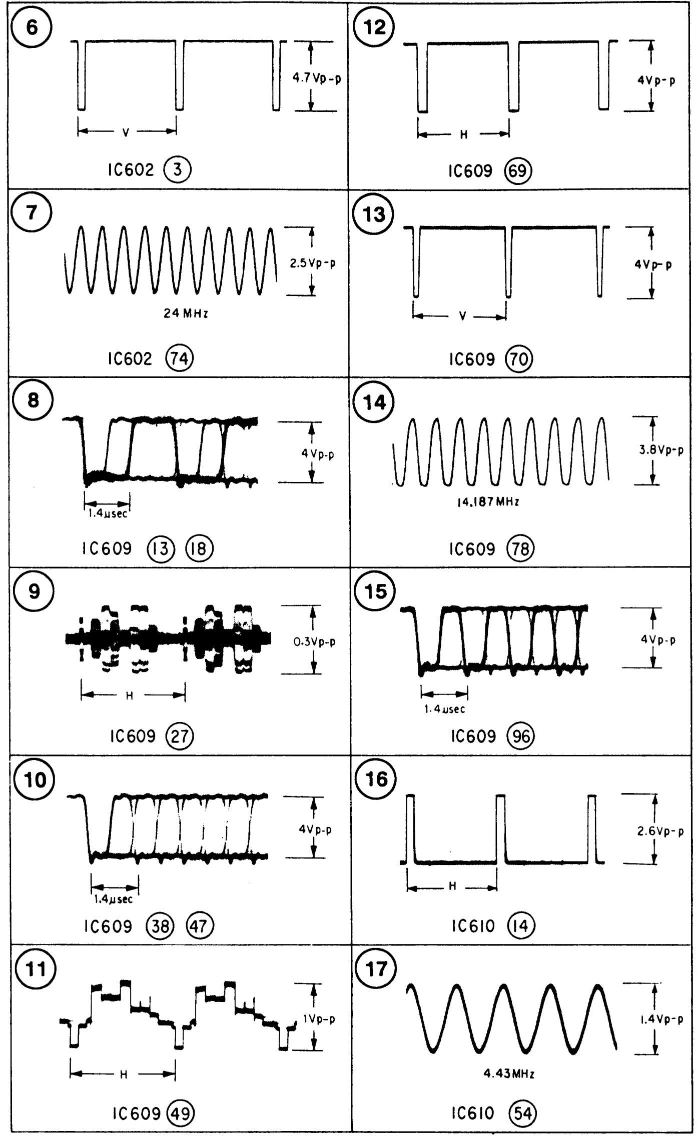
21
22
23
24
25
26
27
28
IC610
SYNC GENERATOR
IC610 CXD2151R-T6
IC614
ON SCREEN DISPLAY
IC614 µPD6461GS-802-GLG-E2
IC604
CHARACTER MIX
IC604 NJM2235M
IC609
CAMERA CORE
DIGITAL CAMERA PROCESS
IC609 CXD2150AR-T6
Q604, 607
CAM Y BUFFER
Q604 2SA1586YG-TE85L
Q607 2SC4116YG-TE85L
Q605, 606
CAM C BUFFER
Q605 2SA1586YG-TE85L
Q606 2SC4116YG-TE85L
FL601
CN601 42P
1 CAM 15V
2 CAM -9V
3 CAM 5V
4 D 5V
5 CAM 5V
6 D 5V
7 D3.6V
8 CAM GND
9 D3.6V
10 CAM GND
11 CAM GND
12 FSC
13 CAM Y
14 CAM VD
15 CAM GND
16 CS SG
17 CAM C
18 FLD
19 CAM GND
20 REG H
21 TG STBY 1
22 REG H
23 CS OSD
24 PB SYNC
25 EVF VDW
26 ZOOM SW
27 EVF VDB
28 MAN FOCUS2
29 DDS VDW
30 MAN FOCUS1
31 DDS VDB
32 SYS RESET
33 DS VDW
34 DATA TO MSTR
35 DS VDB
36 DATA TO SLAVE
37 CS CAM
38 SCK
39 MT 5V
40 MT GND
41 MT 5V
42 MT GND
TO VS-124 BOARD (5/5) CN203
(See Page 4-37)
JL606
TP607
JL608
TP609
JL610
JL611
JL612
JL613
JL614
JL615
JL616
JL617
JL618
L608 10µH
R671
R672

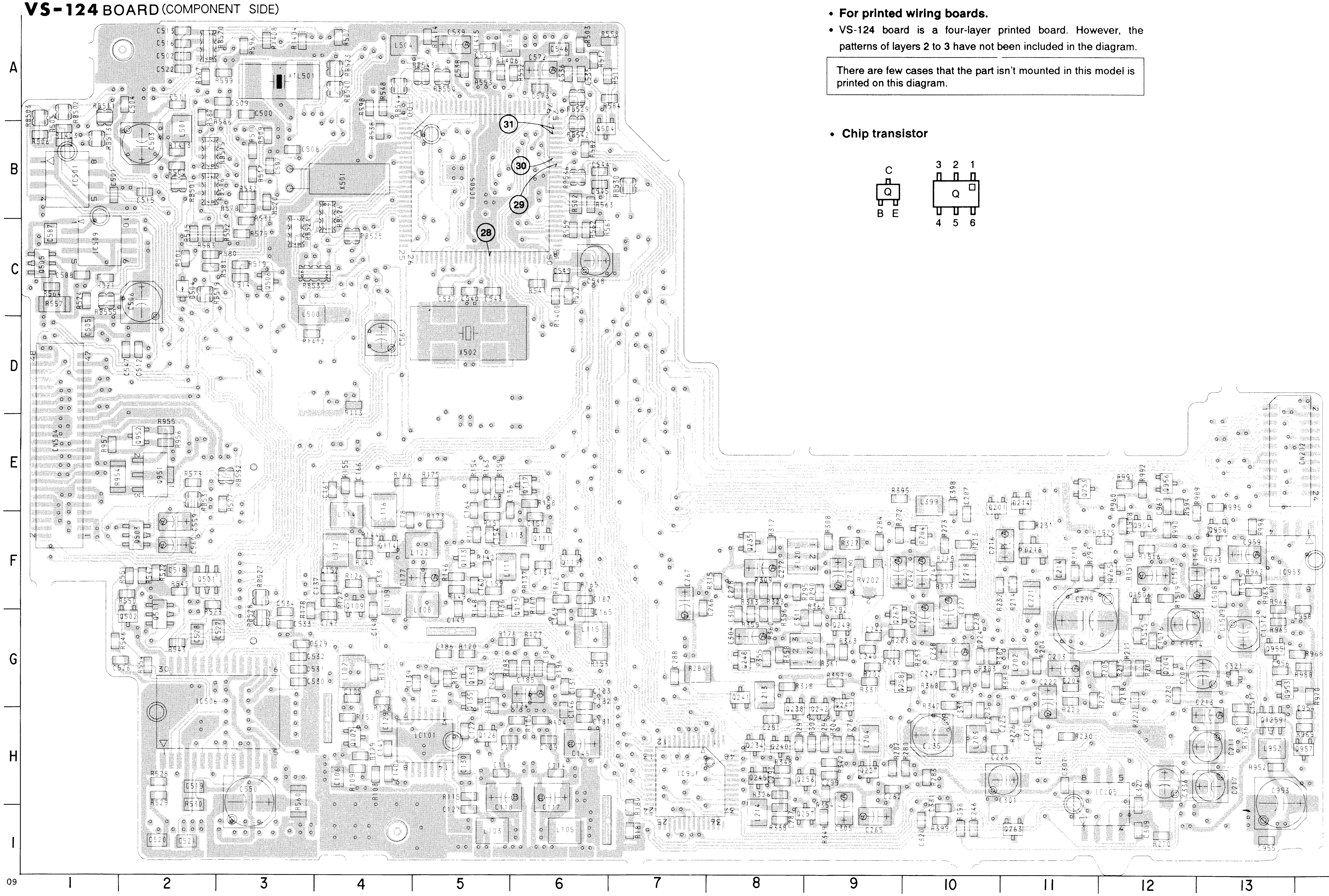
VC-160 BOARD(2/3)



VS-124 (REC/PB HEAD AMPLIFIER, Y/C PROCESS, ELECTRIC VOLUME, SERVO/SYSTEM CONTROL, SIGNAL I/O) PRINTED WIRING BOARD

— Ref. No. VS-124 BOARD: 10,000 series —

VS-124 BOARD (COMPONENT SIDE)


A
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D
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F
G
H
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10
11
12
13
14
IC505
IC506
IC101
IC953
IC205
X501
X502
XTL501
CN504
CN202
28
29
30
31

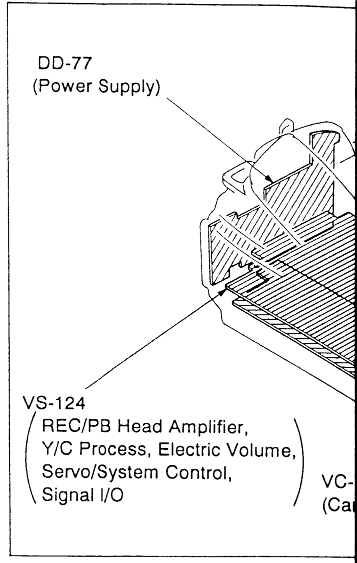
- **For printed wiring boards.**
- VS-124 board is a four-layer printed board. However, the patterns of layers 2 to 3 have not been included in the diagram.

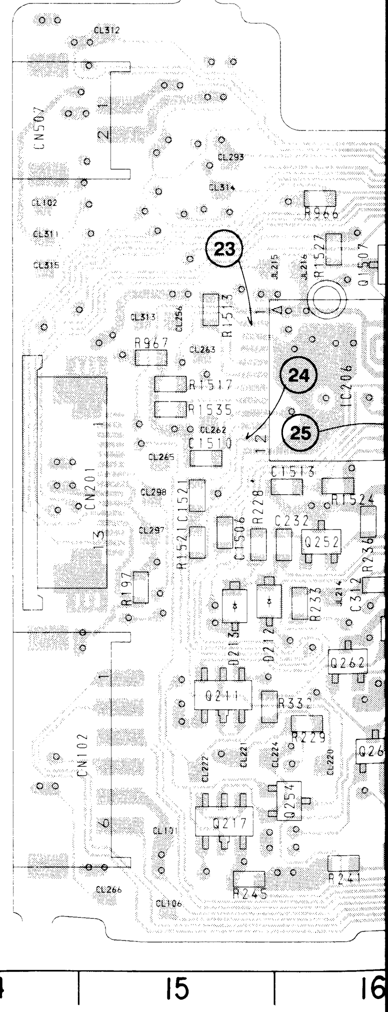
There are few cases that the part isn't mounted in this model is printed on this diagram.

- **Chip transistor**

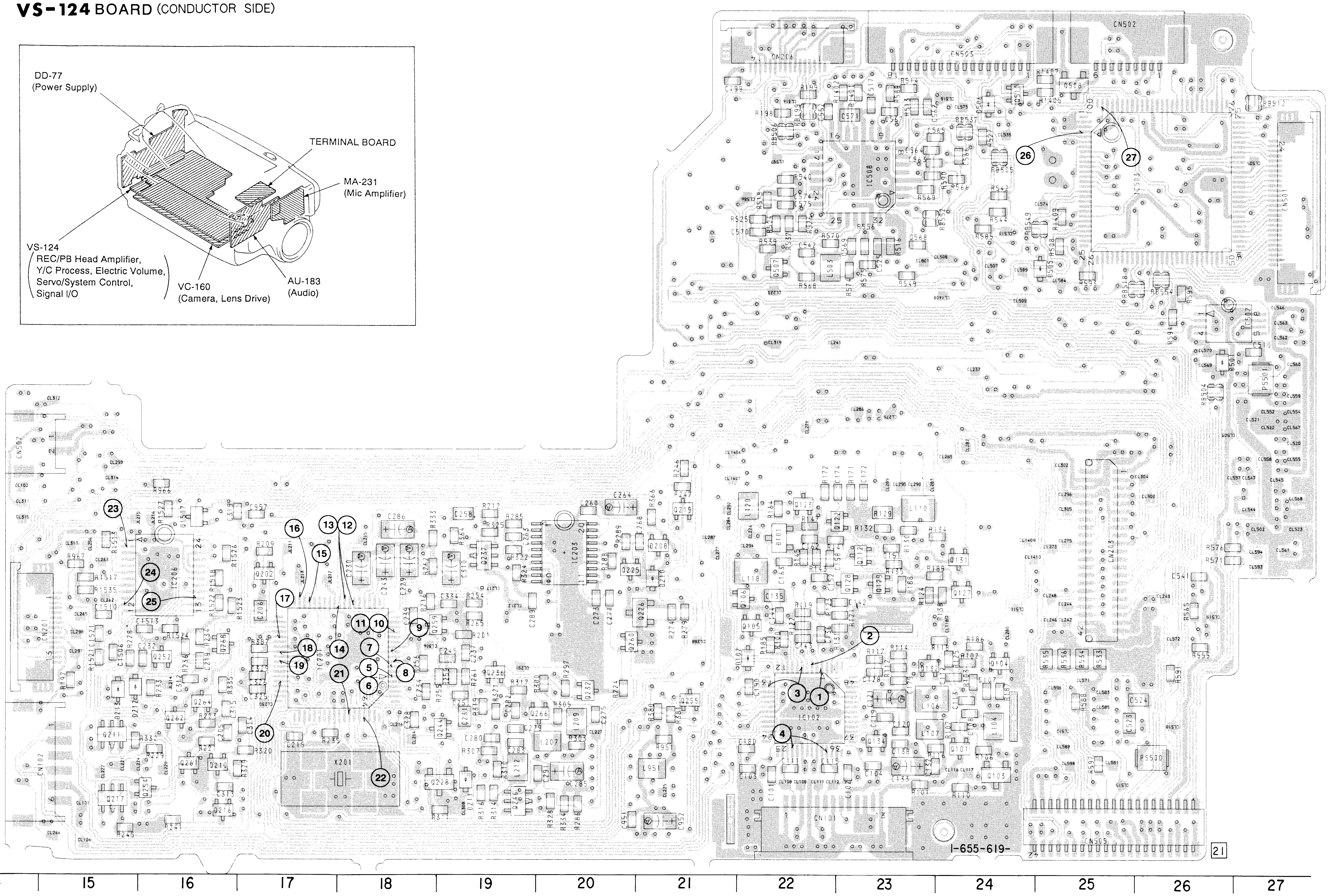
C
Q
B E
3 2 1
Q
4 5 6

VS-124 BOARD (COND


DD-77
(Power Supply)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-
(Ca


23
24
25
CN507
CN201
CN102
15
16

VS-124 BOARD (CONDUCTOR SIDE)


DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)

CN502
CN503
CN206
IC508
IC503
CN501
IC502
PS501
IC206
IC201
IC203
CN203
IC102
CN101
CN505
CN201
CN102
CN504
X201
PS500
1-655-619-
21
①
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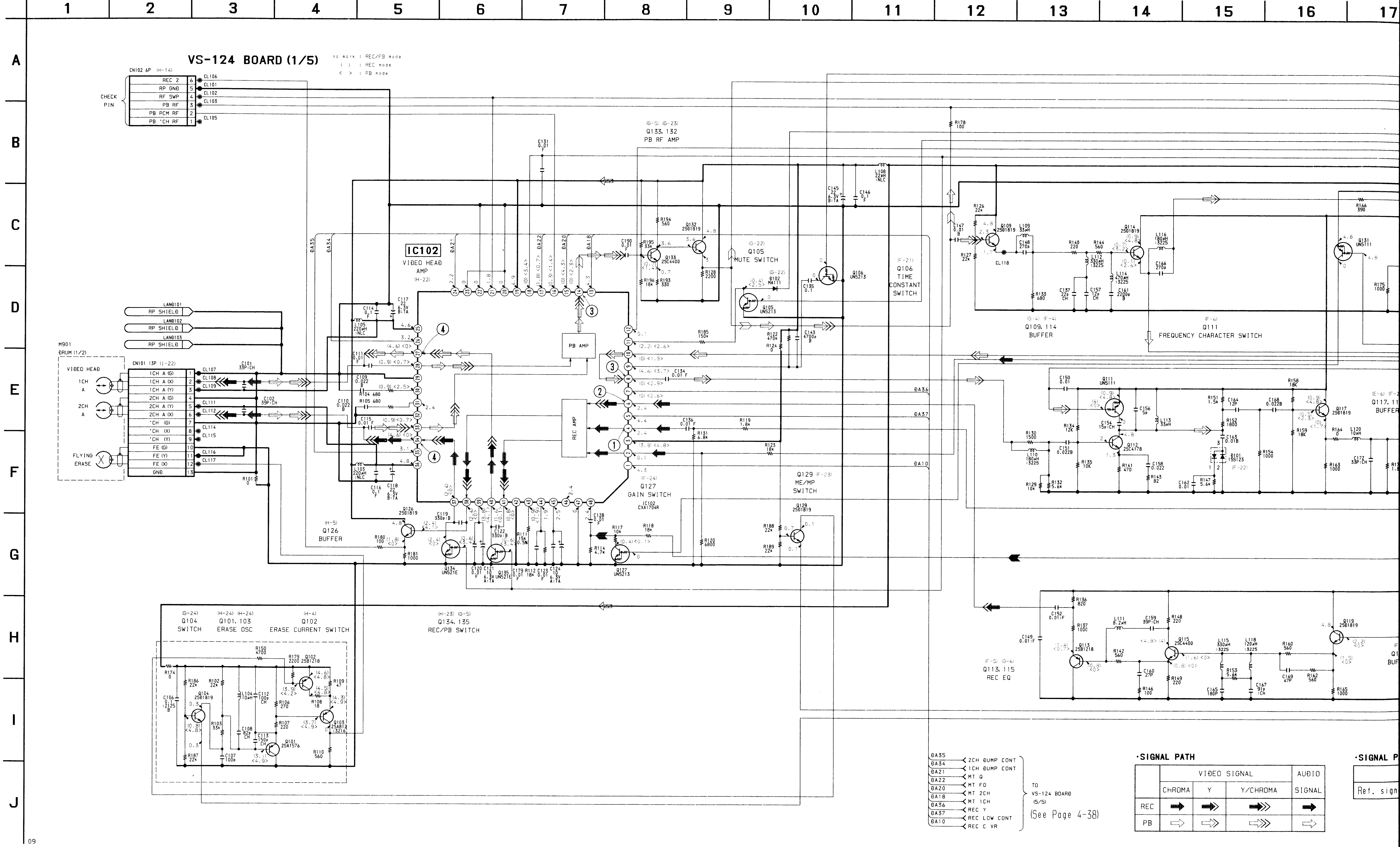
VS-124 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. VS-124 BOARD: 10,000 series —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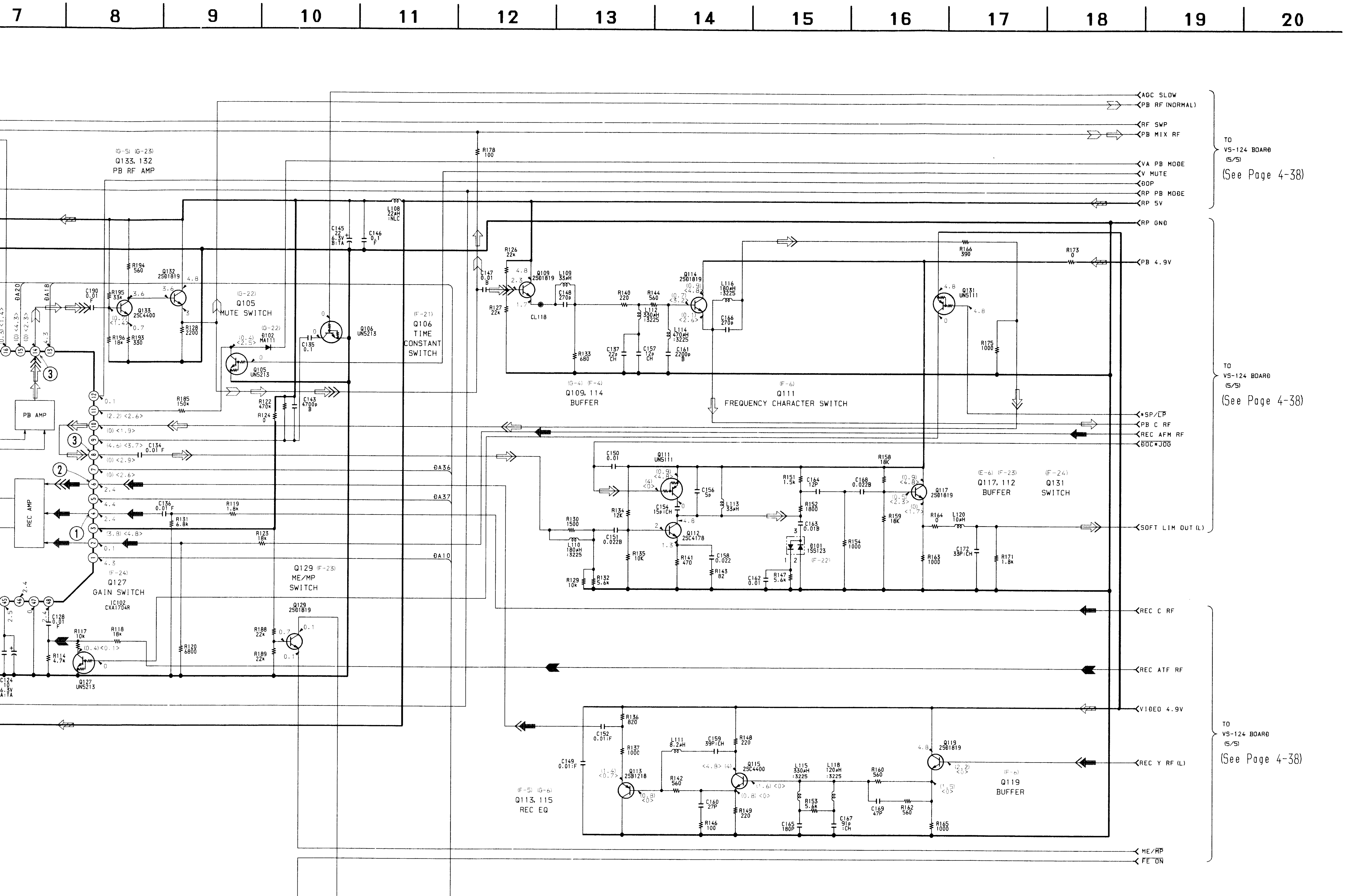
I
J
VS-124 BOARD (1/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN102 6P (H-14)
REC 2
RP GND
RF SWP
PB RF
PB PCM RF
PB ¹CH RF
CHECK PIN
CL106
CL101
CL102
CL103
CL105
LAN0101 RP SHIELD
LAN0102 RP SHIELD
LAN0103 RP SHIELD
M901 DRUM (1/2)
VIDEO HEAD
1CH A
2CH A
FLYING ERASE
CN101 13P (I-22)
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
¹CH (G)
¹CH (X)
¹CH (Y)
FE (G)
FE (Y)
FE (X)
GND
IC102
VIDEO HEAD AMP
(H-22)
PB AMP
REC AMP
IC102 CXA1704R
(G-5) (G-23) Q133, 132 PB RF AMP
(G-22) Q105 MUTE SWITCH
(F-21) Q106 TIME CONSTANT SWITCH
(F-24) Q127 GAIN SWITCH
Q129 (F-23) ME/MP SWITCH
(H-5) Q126 BUFFER
(G-24) Q104 SWITCH
(H-24) (H-24) Q101, 103 ERASE OSC
(H-4) Q102 ERASE CURRENT SWITCH
(H-23) (G-5) Q134, 135 REC/PB SWITCH
(G-4) (F-4) Q109, 114 BUFFER
(F-6) Q111 FREQUENCY CHARACTER SWITCH
(F-5) (G-6) Q113, 115 REC EQ
(E-6) (F-2 Q117, 11 BUFFER
Q119
ÐA35
ÐA34
ÐA21
ÐA22
ÐA20
ÐA18
ÐA36
ÐA37
ÐA10
ÐA35 2CH ÐUMP CONT
ÐA34 1CH ÐUMP CONT
ÐA21 MT Q
ÐA22 MT FO
ÐA20 MT 2CH
ÐA18 MT 1CH
ÐA36 REC Y
ÐA37 REC LOW CONT
ÐA10 REC C VR
TO VS-124 BOARÐ (5/5)
(See Page 4-38)
·SIGNAL PATH
VIÐEO SIGNAL
AUÐIO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
·SIGNAL P
Ref. sign
09


7
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17
18
19
20
Q133, 132
PB RF AMP
Q105
MUTE SWITCH
Q106
TIME
CONSTANT
SWITCH
Q109, 114
BUFFER
Q111
FREQUENCY CHARACTER SWITCH
Q117, 112
BUFFER
Q131
SWITCH
PB AMP
REC AMP
Q127
GAIN SWITCH
IC102
CXA1704R
Q129
ME/MP
SWITCH
Q113, 115
REC EQ
Q119
BUFFER
AGC SLOW
PB RF (NORMAL)
RF SWP
PB MIX RF
VA PB MODE
V MUTE
DOP
RP PB MODE
RP 5V
RP GND
PB 4.9V
*SP/LP
PB C RF
REC AFM RF
DOC*JOG
SOFT LIM OUT (L)
REC C RF
REC ATF RF
VIDEO 4.9V
REC Y RF (L)
ME/HP
FE ON
TO
VS-124 BOARD
(5/5)
(See Page 4-38)
ØA36
ØA37
ØA10
ØA35
ØA34
ØA21
ØA22
ØA20
ØA18
2CH DUMP CONT
1CH DUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR

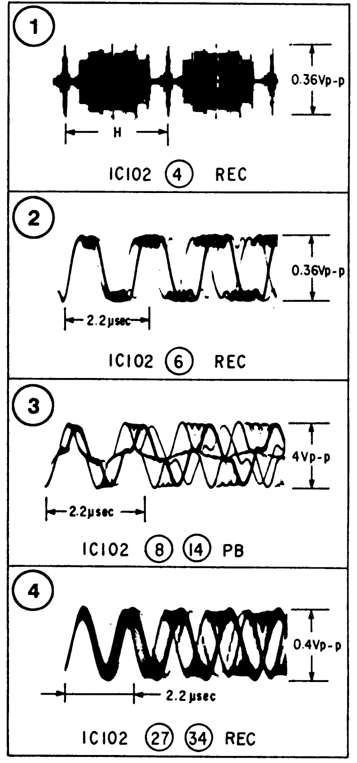
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		⇨

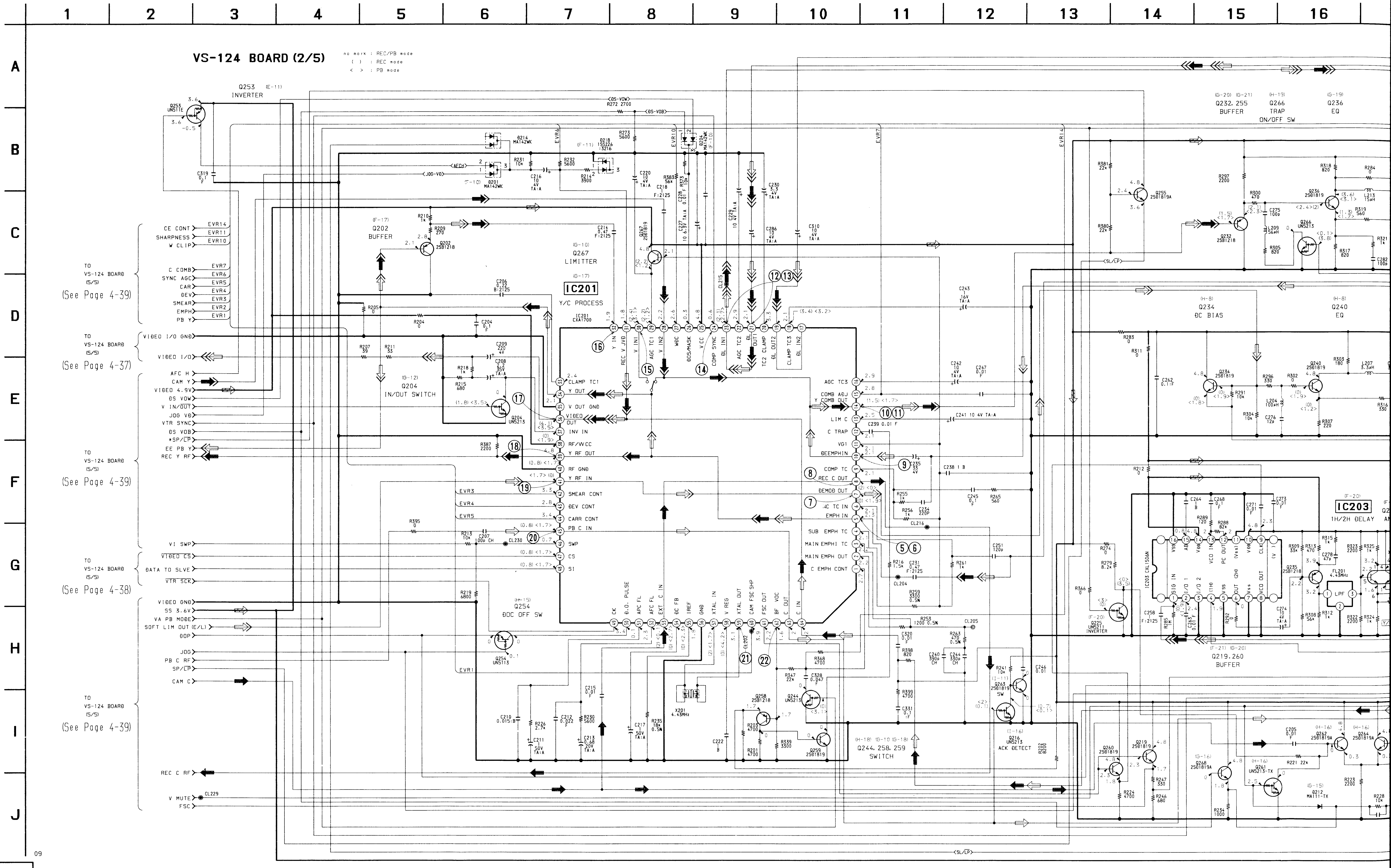
VS-124 BOARD(1/5)



VS-124 (Y/C PROCESS) SCHEMATIC DIAGRAM

— Ref. No. VS-124 BOARD: 10,000 series —

- Refer to page 4-21 for Printed Wiring Board.



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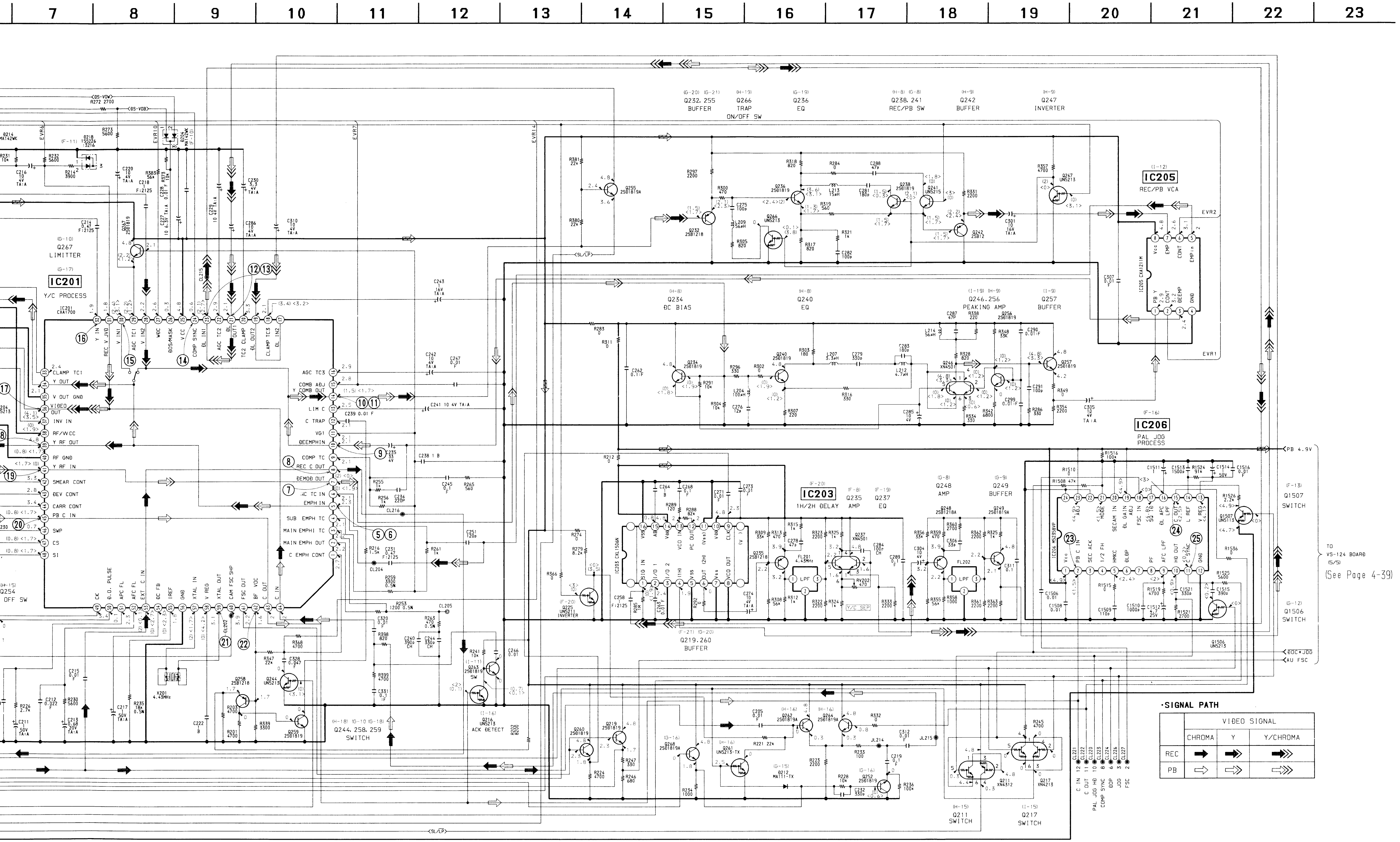
G
H
I
J
VS-124 BOARD (2/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q253 INVERTER
Q202 BUFFER
Q267 LIMITTER
IC201 Y/C PROCESS
IC201 CXA1700
Q204 IN/OUT SWITCH
Q254 DOC OFF SW
Q244, 258, 259 SWITCH
Q216 ACK DETECT
Q263 SW
Q232, 255 BUFFER
Q266 TRAP ON/OFF SW
Q236 EQ
Q234 DC BIAS
Q240 EQ
IC203 1H/2H DELAY
IC203 CXL1506N
Q225 INVERTER
Q219, 260 BUFFER
X201 4.43MHz
FL201 4.43MHz
TO VS-124 BOARD (5/5) (See Page 4-39)
TO VS-124 BOARD (5/5) (See Page 4-37)
TO VS-124 BOARD (5/5) (See Page 4-39)
TO VS-124 BOARD (5/5) (See Page 4-38)
TO VS-124 BOARD (5/5) (See Page 4-39)
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
DEV
SMEAR
EMPH
PB Y
VIDEO I/O GND
VIDEO I/O
AFC H
CAM Y
VIDEO 4.9V
DS VDW
V IN/OUT
JOG VD
VTR SYNC
DS VDB
SP/LP
EE PB Y
REC Y RF
VI SWP
VIDEO CS
DATA TO SLVE
VTR SCK
VIDEO GND
SS 3.6V
VA PB MODE
SOFT LIM OUT (E/L)
DOP
JOG
PB C RF
SP/LP
CAM C
REC C RF
V MUTE
FSC
CLAMP TC1
Y OUT
V OUT GND
VIDEO OUT
INV IN
RF/W CC
Y RF OUT
RF GND
Y RF IN
SMEAR CONT
DEV CONT
CARR CONT
PB C IN
SWP
CS
SI
AGC TC3
COMB ADJ
Y COMB OUT
LIM C
C TRAP
VG1
DEEMPH IN
COMP TC
REC C OUT
DEMOD OUT
AC TC IN
EMPH IN
SUB EMPH TC
MAIN EMPH TC
MAIN EMPH OUT
C EMPH CONT
Y IN
REC V VD
V IN
V IN2
AGC TC1
AGC TC2
WDC
DDS/MASK
V CC
COMP SYNC
DL IN1
DL OUT1
TC2 CLAMP
DL OUT2
CLAMP TC3
DL IN2
CK
D.O. PULSE
APC FL
AFC FL
EXT C IN
DC FB
IREF
GND
XTAL IN
V REG
XTAL OUT
CAM FSC SHP
FSC OUT
BF VDC
C OUT
C IN
EVR1
EVR2
EVR3
EVR4
EVR5
EVR6
EVR7
EVR10
EVR11
EVR14
SL/LP

- Refer to page 4-21 for Printed Wiring Board.

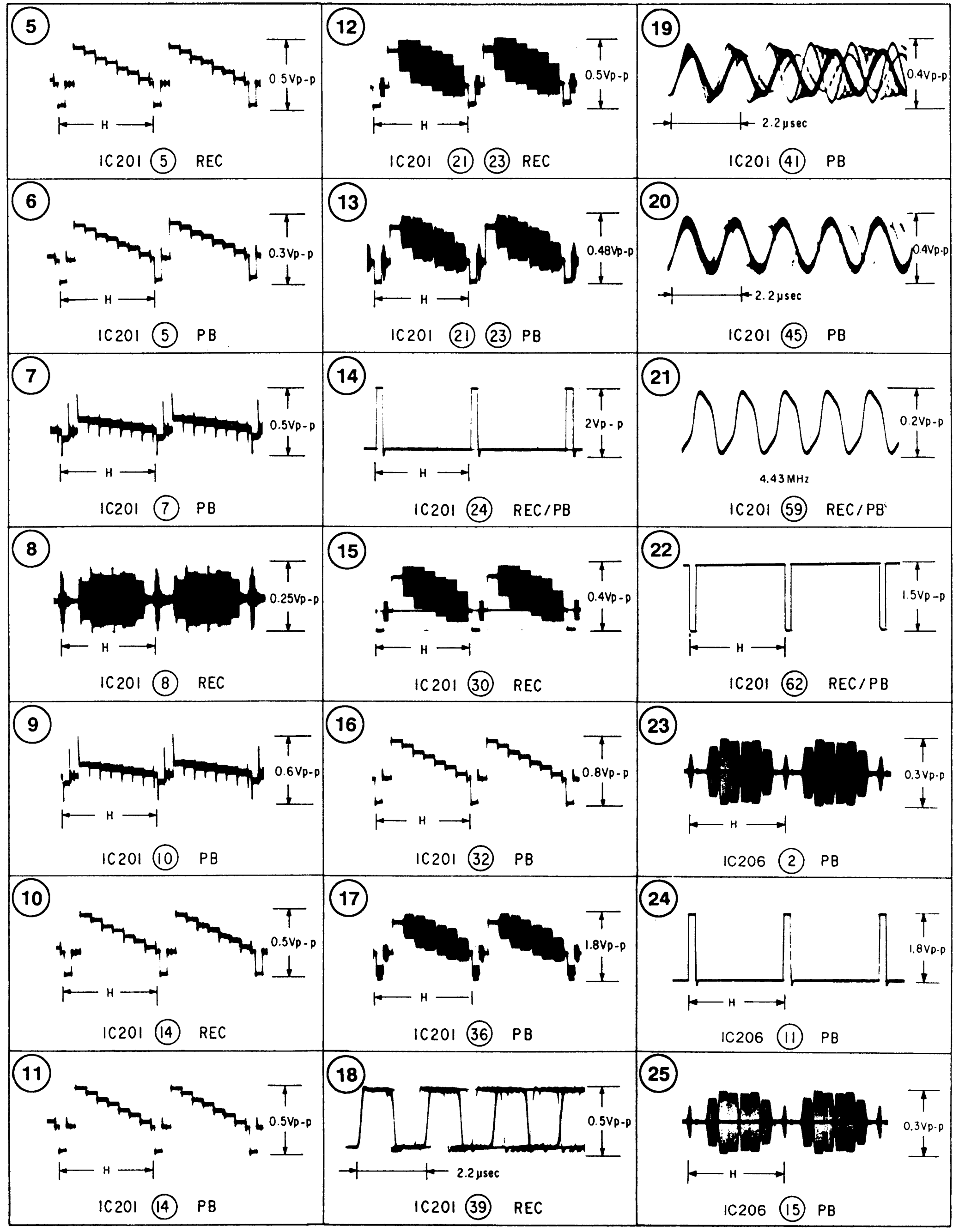


7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
IC201
Y/C PROCESS
IC201 CXA1700
(G-10) Q267 LIMITTER
IC205
REC/PB VCA
IC205 CXA1211M
IC206
PAL JOG PROCESS
IC206 M52359FP
IC203
1H/2H DELAY
IC203 CXL1506N
(G-20) (G-21) Q232, 255 BUFFER
(H-19) Q266 TRAP ON/OFF SW
(G-19) Q236 EQ
(H-8) (G-8) Q238, 241 REC/PB SW
(H-9) Q242 BUFFER
(H-9) Q247 INVERTER
(H-8) Q234 DC BIAS
(H-8) Q240 EQ
(I-19) (H-9) Q246, 256 PEAKING AMP
(I-9) Q257 BUFFER
(F-8) Q235 AMP
(F-19) Q237 EQ
(G-8) Q248 AMP
(G-9) Q249 BUFFER
(F-21) (G-20) Q219, 260 BUFFER
(F-20) Q225 UN5211 INVERTER
(H-18) (G-10) (G-18) Q244, 258, 259 SWITCH
(I-16) Q216 UN5213 ACK DETECT
(H-15) Q211 SWITCH
(I-15) Q217 SWITCH
(F-13) Q1507 SWITCH
(G-12) Q1506 SWITCH
(H-15) Q254 OFF SW
PB 4.9V
TO VS-124 BOARD (5/5)
(See Page 4-39)
DOC+JOG
AU FSC
C IN
C OUT
PAL JOG HD
COMP SYNC
BDP
JOG
FSC
EVR1
EVR2
<SL/LP>
Y/C SEP
X201 4.43MHz

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡≫
PB	⇨	⇨⇨	⇨≫

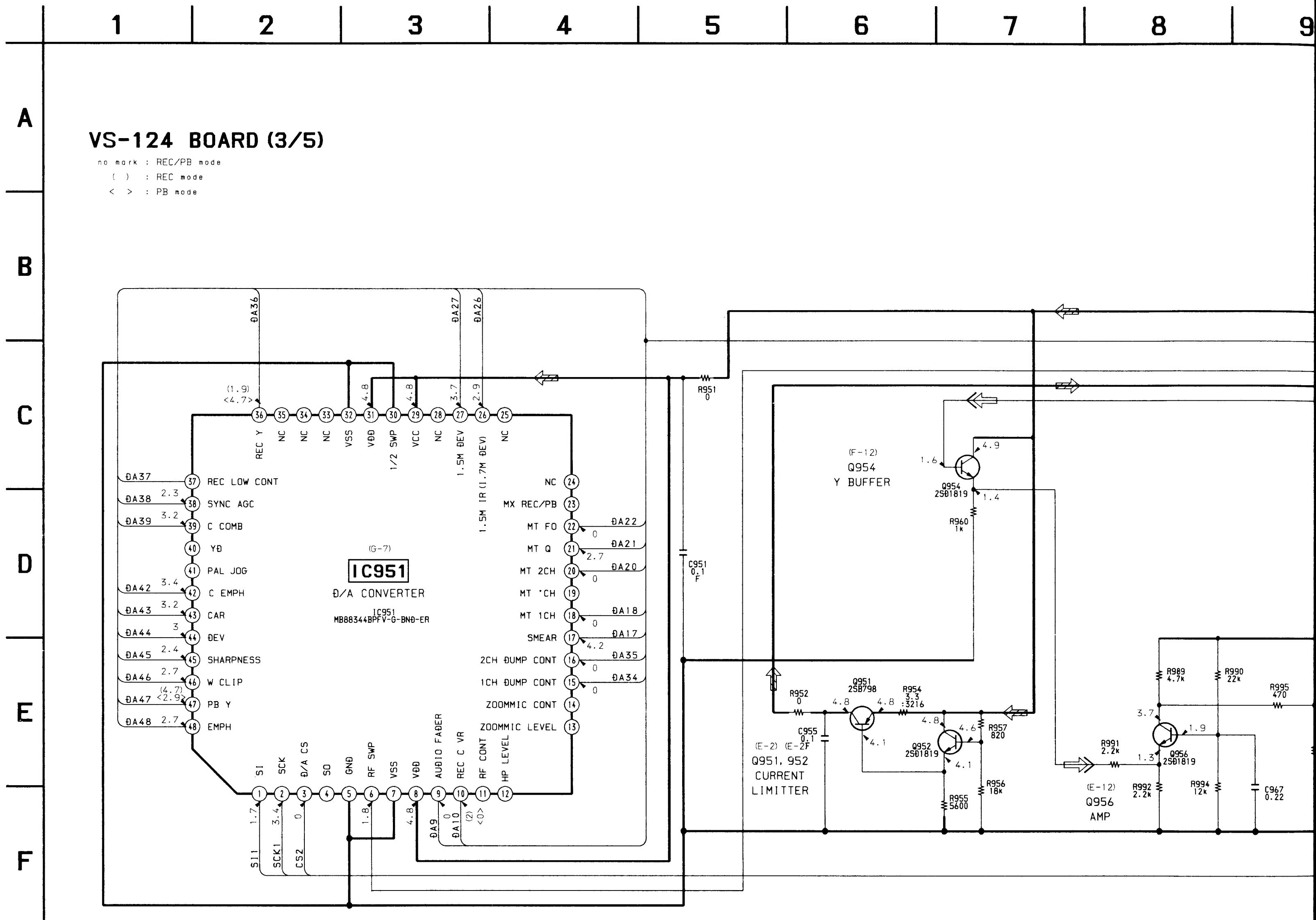
VS-124BOARD (2/5)



VS-124 (ELECTRIC VOLUME) SCHEMATIC DIAGRAM

- Refer to page 4-21 for Printed Wiring Board.

— Ref. No. VS-124 BOARD: 10,000 series —


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
VS-124 BOARD (3/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
ĐA36
ĐA27
ĐA26
(1.9)
<4.7>
REC Y
NC
VSS
VĐĐ
1/2 SWP
VCC
1.5M ĐEV
1.5M IR (1.7M ĐEV)
ĐA37
REC LOW CONT
ĐA38
SYNC AGC
ĐA39
C COMB
YĐ
PAL JOG
ĐA42
C EMPH
ĐA43
CAR
ĐA44
ĐEV
ĐA45
SHARPNESS
ĐA46
W CLIP
ĐA47
PB Y
ĐA48
EMPH
(G-7)
IC951
Đ/A CONVERTER
IC951
MB88344BPFV-G-BNĐ-ER
MX REC/PB
MT FO
ĐA22
MT Q
ĐA21
MT 2CH
ĐA20
MT 1CH
ĐA18
SMEAR
ĐA17
2CH ĐUMP CONT
ĐA35
1CH ĐUMP CONT
ĐA34
ZOOMMIC CONT
ZOOMMIC LEVEL
SI
SCK
Đ/A CS
SO
GND
RF SWP
AUDIO FAĐER
REC C VR
RF CONT
HP LEVEL
SI1
SCK1
CS2
ĐA9
ĐA10
R951
0
C951
0.1
F
(F-12)
Q954
Y BUFFER
Q954
2SĐ1819
R960
1k
R952
0
Q951
2SB798
R954
3.3
:3216
C955
0.1
(E-2) (E-2F
Q951, 952
CURRENT
LIMITTER
Q952
2SĐ1819
R957
820
R956
18k
R955
5600
R989
4.7k
R990
22k
R995
470
R991
2.2k
Q956
2SĐ1819
(E-12)
Q956
AMP
R992
2.2k
R994
12k
C967
0.22

·SIGNAL PATH

	VIĐEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		➡≫
PB	⇨	⇨≫	⇨≫

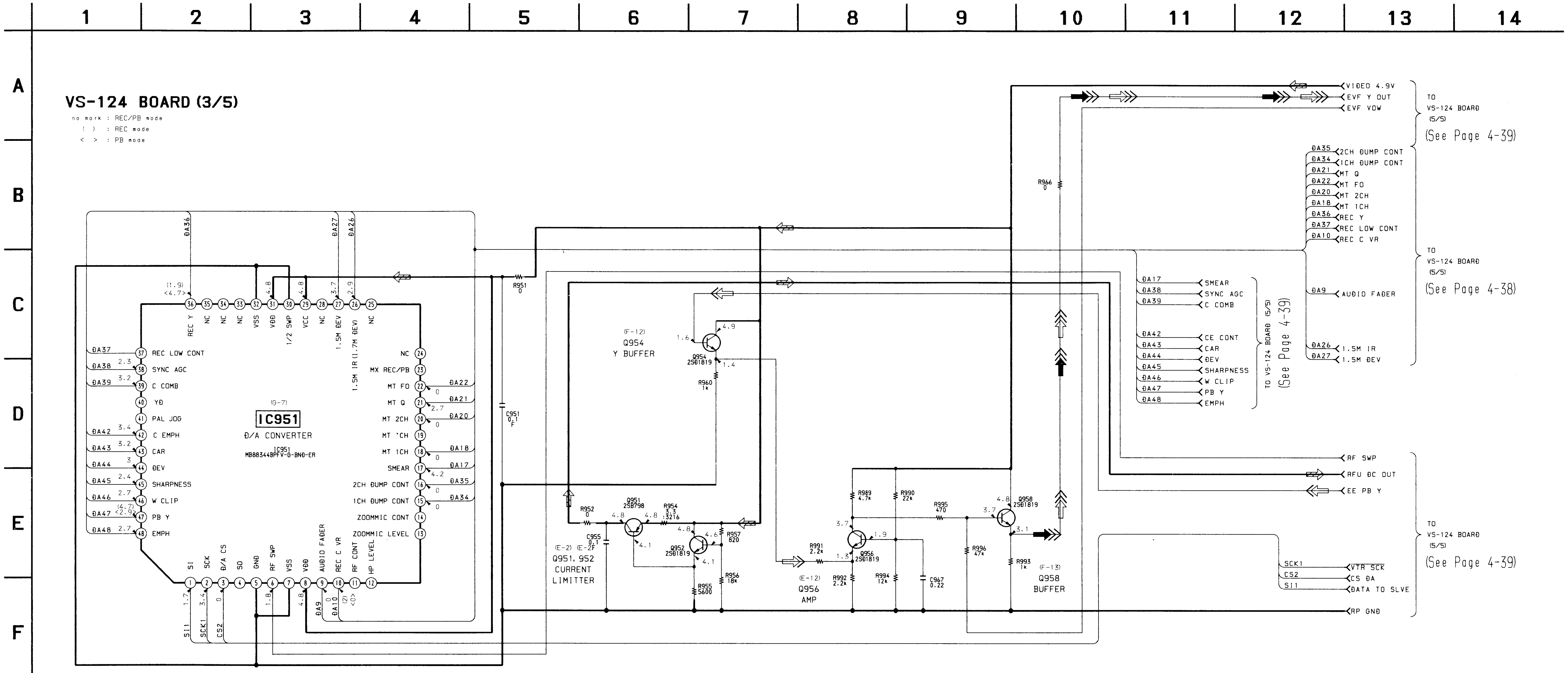
G

09

VS-124 (ELECTRIC VOLUME) SCHEMATIC DIAGRAM

— Ref. No. VS-124 BOARD: 10,000 series —

- Refer to page 4-21 for Printed Wiring Board.


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G
VS-124 BOARD (3/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
IC951
Ð/A CONVERTER
IC951 MB88344BPFV-G-BND-ER
(G-7)
REC LOW CONT
SYNC AGC
C COMB
YÐ
PAL JOG
C EMPH
CAR
ÐEV
SHARPNESS
W CLIP
PB Y
EMPH
NC
MX REC/PB
MT FO
MT Q
MT 2CH
MT 1CH
SMEAR
2CH ÐUMP CONT
1CH ÐUMP CONT
ZOOMMIC CONT
ZOOMMIC LEVEL
SI
SCK
Ð/A CS
SO
GNÐ
RF SWP
VSS
VÐÐ
AUDIO FADER
REC C VR
RF CONT
HP LEVEL
REC Y
VÐÐ
1/2 SWP
VCC
1.5M ÐEV
1.5M IR (1.7M ÐEV)
(F-12) Q954 Y BUFFER
Q954 2SD1819
R960 1k
(E-2) (E-2) Q951, 952 CURRENT LIMITTER
Q951 2SB798
Q952 2SD1819
R952 0
R954 3.3
C955 0.1
R955 5600
R956 18k
R957 820
R951 0
C951 0.1 F
(E-12) Q956 AMP
Q956 2SD1819
R989 4.7k
R990 22k
R991 2.2k
R992 2.2k
R994 12k
C967 0.22
R995 470
R996 47k
(F-13) Q958 BUFFER
Q958 2SD1819
R993 1k
R966 0
VIDEO 4.9V
EVF Y OUT
EVF VÐW
TO VS-124 BOARD (5/5) (See Page 4-39)
ÐA35 2CH ÐUMP CONT
ÐA34 1CH ÐUMP CONT
ÐA21 MT Q
ÐA22 MT FO
ÐA20 MT 2CH
ÐA18 MT 1CH
ÐA36 REC Y
ÐA37 REC LOW CONT
ÐA10 REC C VR
ÐA9 AUDIO FAÐER
TO VS-124 BOARD (5/5) (See Page 4-38)
ÐA26 1.5M IR
ÐA27 1.5M ÐEV
ÐA17 SMEAR
ÐA38 SYNC AGC
ÐA39 C COMB
ÐA42 CE CONT
ÐA43 CAR
ÐA44 ÐEV
ÐA45 SHARPNESS
ÐA46 W CLIP
ÐA47 PB Y
ÐA48 EMPH
TO VS-124 BOARD (5/5) (See Page 4-39)
RF SWP
RFU ÐC OUT
EE PB Y
SCK1 VTR SCK
CS2 CS ÐA
SI1 ÐATA TO SLVE
RP GNÐ
TO VS-124 BOARD (5/5) (See Page 4-39)
09

·SIGNAL PATH

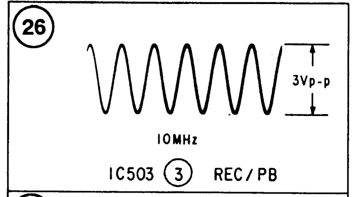
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		➡≫
PB	⇨	⇨≫	⇨≫

VS-124 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

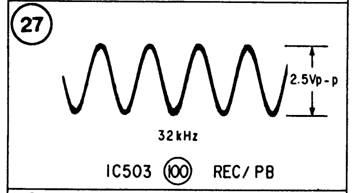
— Ref. No. VS-124 BOARD: 10,000 series —

- Refer to page 4-21 for Printed Wiring Board.

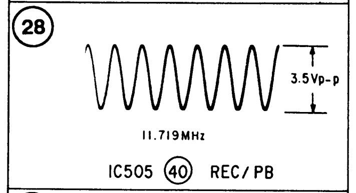
VS-124 BOARD (4/5)



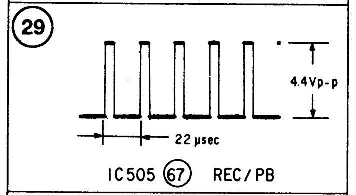
IC503 ③ REC/PB



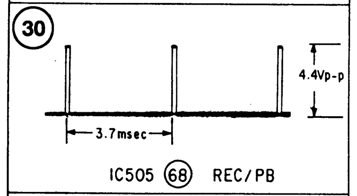
IC503 ⑩⓪ REC/PB



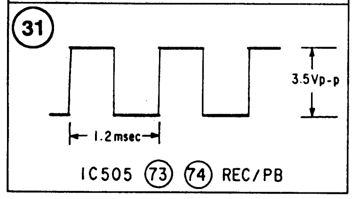
IC505 ④⓪ REC/PB



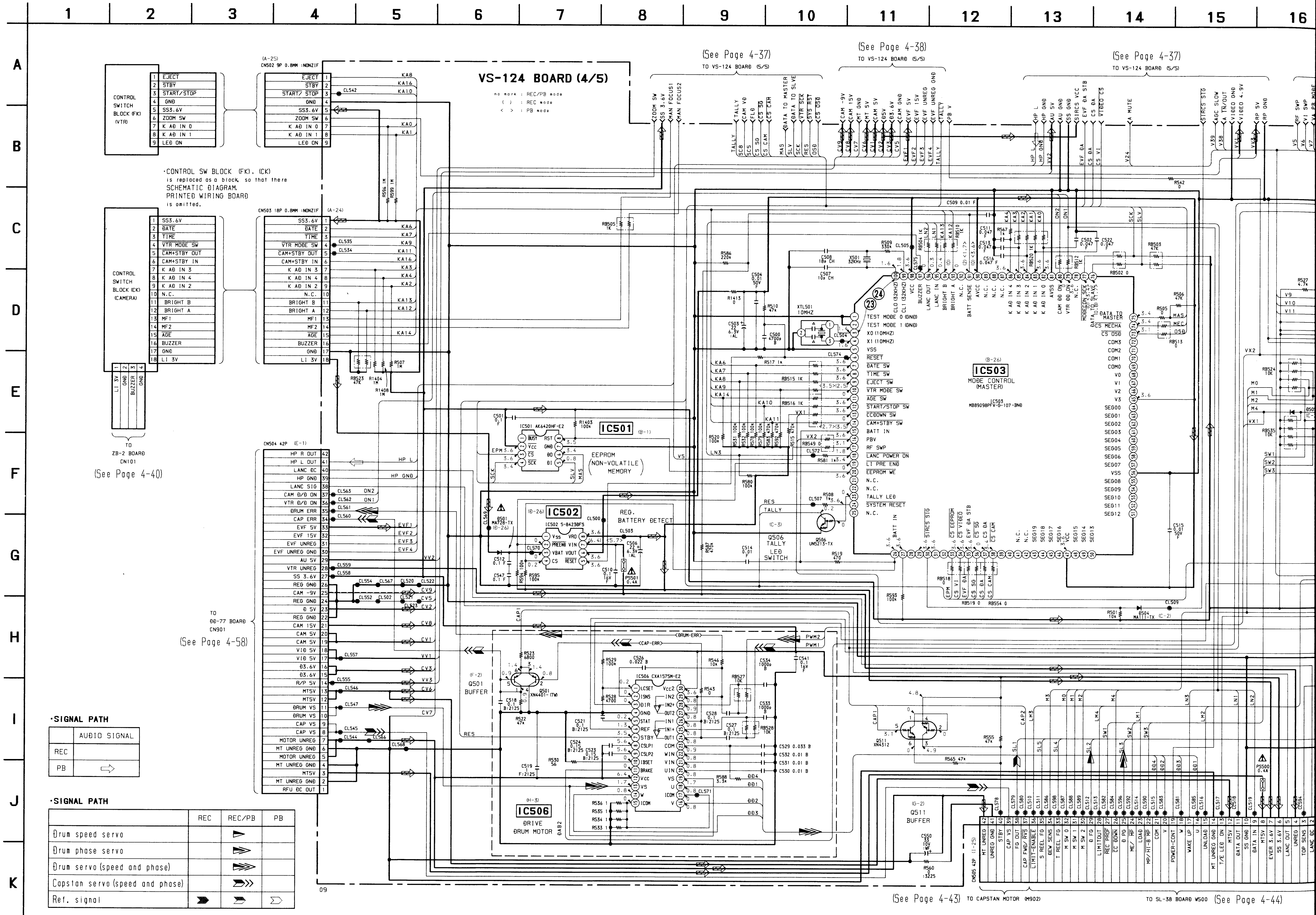
IC505 ⑥⑦ REC/PB



IC505 ⑥⑧ REC/PB



IC505 ⑦③ ⑦④ REC/PB



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C
D
E
F
G
H
I
J
K
VS-124 BOARD (4/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CONTROL SWITCH BLOCK (FK) (VTR)
CN502 9P 0.8MM :NONZIF
EJECT
STBY
START/STOP
GND
SS3.6V
ZOOM SW
KA0 IN 0
KA0 IN 1
LED ON
·CONTROL SW BLOCK (FK), (CK) is replaced as a block, so that there SCHEMATIC DIAGRAM, PRINTED WIRING BOARD is omitted.
CONTROL SWITCH BLOCK (CK) (CAMERA)
CN503 18P 0.8MM :NONZIF
TO ZB-2 BOARD CN101
(See Page 4-40)
CN504 42P
TO DD-77 BOARD CN901
(See Page 4-58)
(See Page 4-37) TO VS-124 BOARD (5/5)
(See Page 4-38) TO VS-124 BOARD (5/5)
(See Page 4-37) TO VS-124 BOARD (5/5)
IC501 EEPROM (NON-VOLATILE MEMORY)
IC501 AK6420HF-E2
IC502 REG. BATTERY DETECT
IC502 S-84230FS
IC503 MODE CONTROL (MASTER)
IC503 MB89098PFV-G-107-BND
Q506 TALLY LED SWITCH
Q501 BUFFER
IC506 DRIVE DRUM MOTOR
IC506 CXA1575N-E2
Q511 BUFFER
CN505 42P
(See Page 4-43) TO CAPSTAN MOTOR (M902)
TO SL-38 BOARD WS00 (See Page 4-44)
XTL501 10MHZ
X501 32KHz
09

·SIGNAL PATH

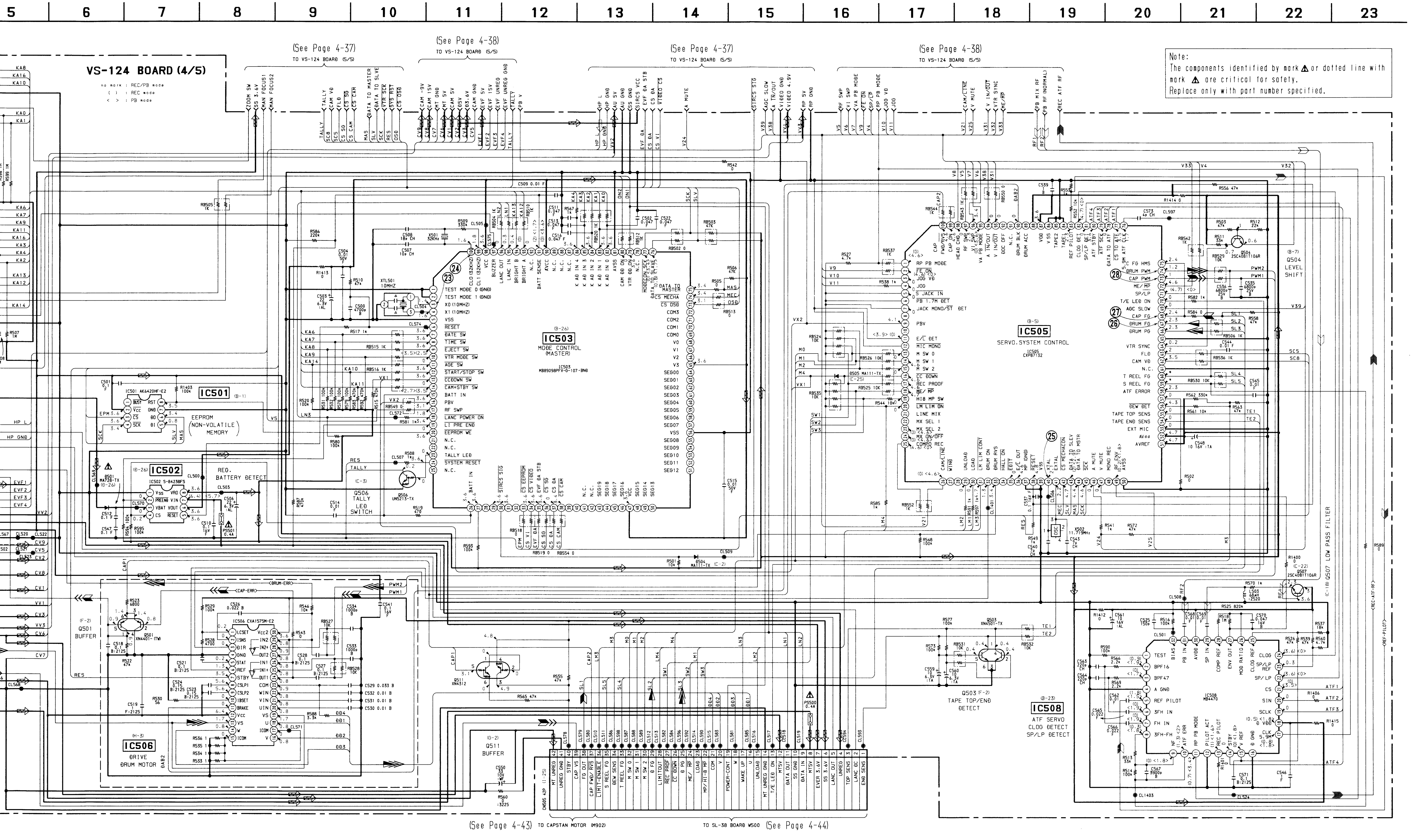
	AUDIO SIGNAL
REC	
PB	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶>	
Drum servo (speed and phase)		▶>>	
Capstan servo (speed and phase)		➧››	
Ref. signal	➧	➧	▷

SERVO/SYSTEM CONTROL

• Refer to page 4-21 for Printed Wiring Board.


5
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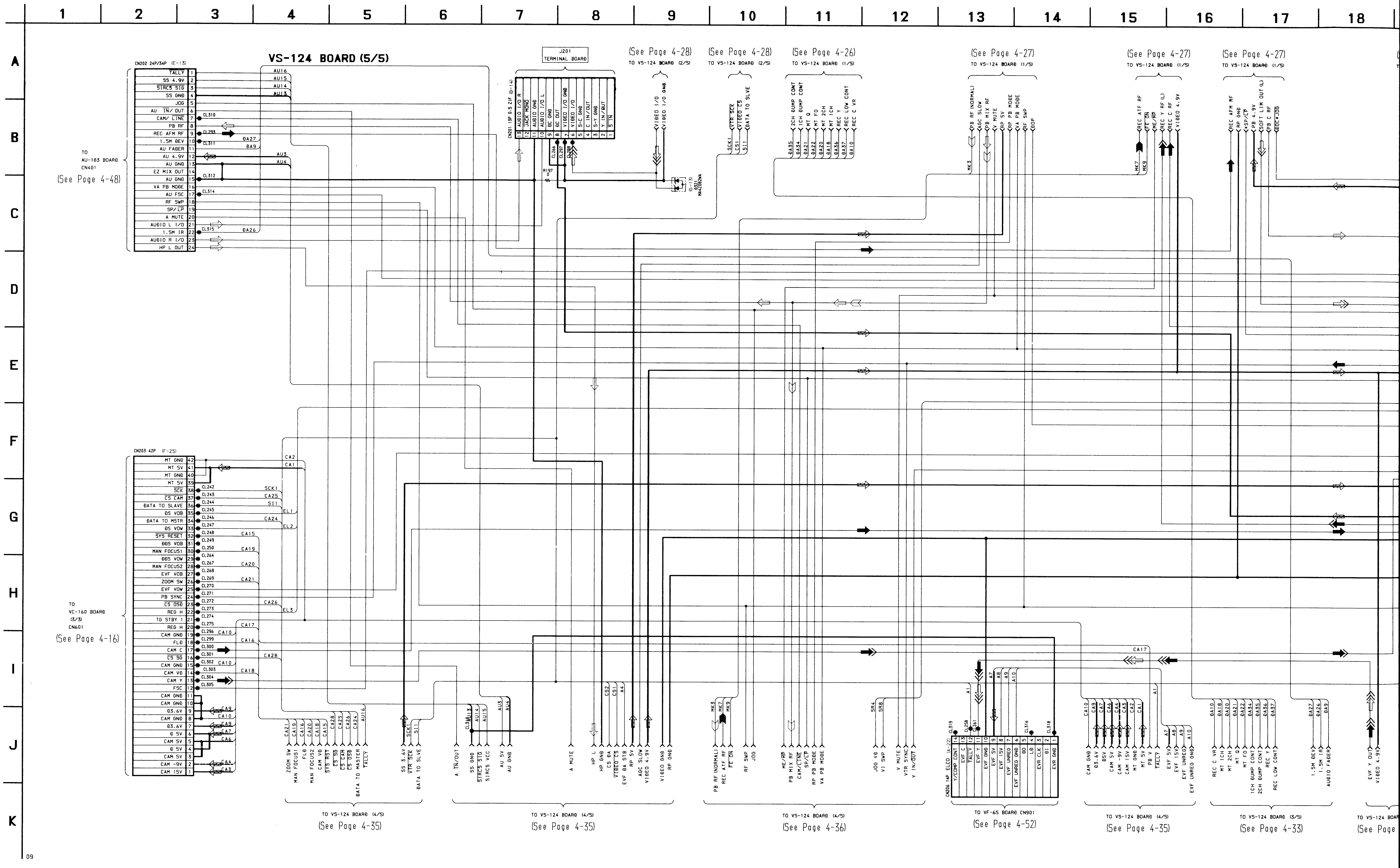
17
18
19
20
21
22
23
VS-124 BOARD (4/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(See Page 4-37) TO VS-124 BOARD (5/5)
(See Page 4-38) TO VS-124 BOARD (5/5)
(See Page 4-37) TO VS-124 BOARD (5/5)
(See Page 4-38) TO VS-124 BOARD (5/5)
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.
IC501 EEPROM (NON-VOLATILE MEMORY)
IC501 AK6420HF-E2
IC502 REG. BATTERY DETECT
IC502 S-84230FS
IC503 MODE CONTROL (MASTER)
IC503 MB89098PFV-G-107-BND
IC505 SERVO. SYSTEM CONTROL
IC505 CXP87132
IC506 DRIVE DRUM MOTOR
IC506 CXA1575M-E2
IC508 ATF SERVO CLOG DETECT SP/LP DETECT
IC508 MB4470
Q501 BUFFER
Q501 XN4401-(TW)
Q504 LEVEL SHIFT
Q504 2SC4081T106R
Q503 TAPE TOP/END DETECT
Q503 XN4501-TX
Q506 TALLY LED SWITCH
Q506 UN5213-TX
Q507 LOW PASS FILTER
Q507 2SC4081T106R
Q511 BUFFER
Q511 XN4312
D505 MA111-TX
D504 MA111-TX
XTL501 10MHZ
X501 32KHz
X502 11.719MHz
CN505 42P
(See Page 4-43) TO CAPSTAN MOTOR (M902)
TO SL-38 BOARD W500 (See Page 4-44)

VS-124 (SIGNAL I/O) SCHEMATIC DIAGRAM

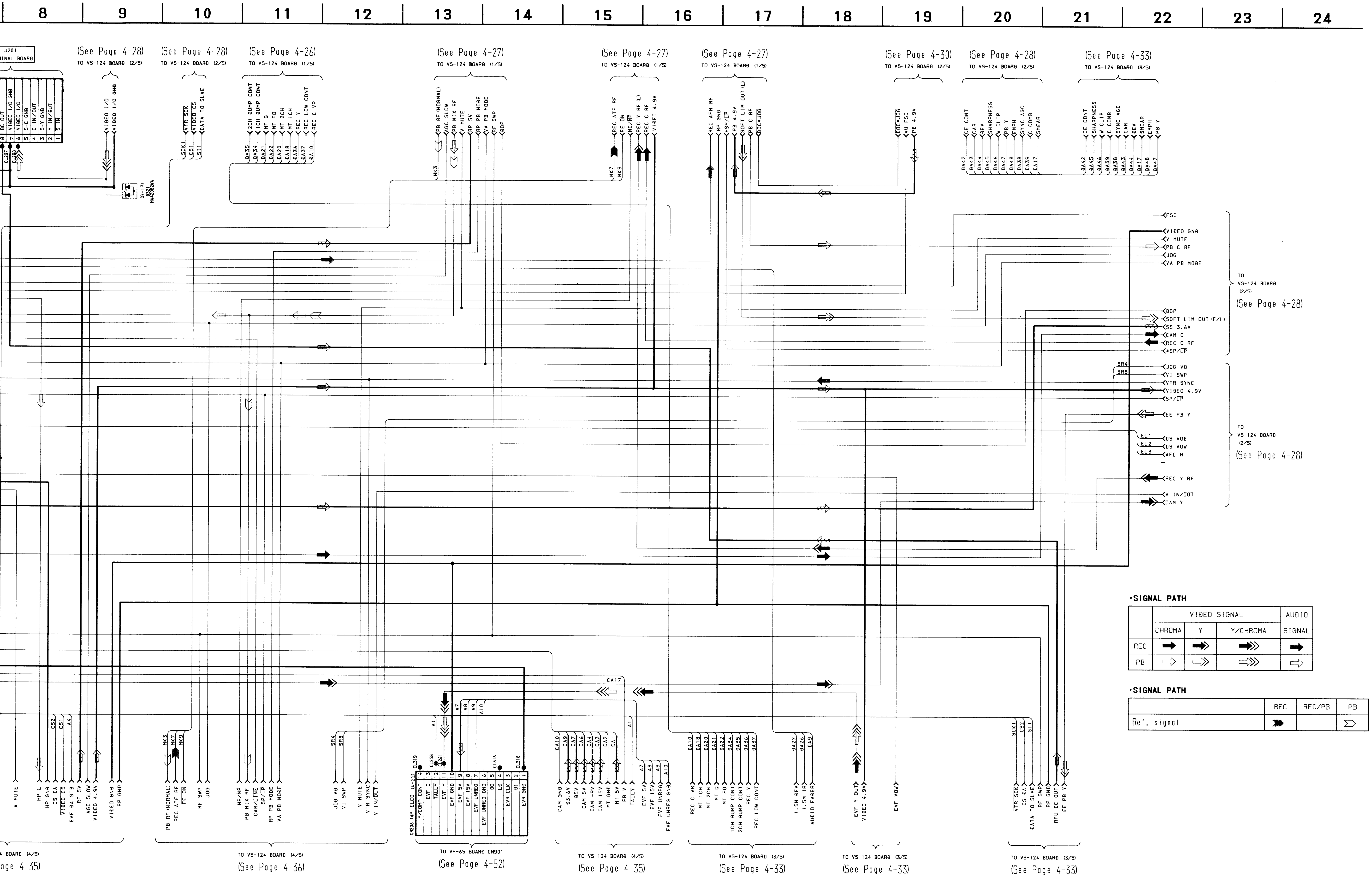
— Ref. No. VS-124 BOARD: 10,000 series —

- Refer to page 4-21 for Printed Wiring Board.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K
VS-124 BOARD (5/5)
CN202 24P/34P (E-13)
TALLY 1
SS 4.9V 2
SIRCS SIG 3
SS GND 4
JOG 5
AU IN/OUT 6
CAM/LINE 7
PB RF 8
REC AFM RF 9
1.5M BEV 10
AU FADER 11
AU 4.9V 12
AU GND 13
EZ MIX OUT 14
AU GND 15
VA PB MODE 16
AU FSC 17
RF SWP 18
SP/LP 19
A MUTE 20
AUDIO L I/O 21
1.5M IR 22
AUDIO R I/O 23
HP L OUT 24
TO AU-183 BOARD CN401
(See Page 4-48)
CL310 CL293 CL311 CL312 CL314 CL315
AU16 AU15 AU14 AU13 AU3 AU4 BA27 BA9 BA26
J201 TERMINAL BOARD
CN201 13P 0.5 ZIF (G-14)
13 AUDIO I/O R
12 JACK MONO
11 AUDIO GND
10 AUDIO I/O L
9 DC GND
8 DC OUT
7 VIDEO I/O GND
6 VIDEO I/O
5 S-C GND
4 C IN/OUT
3 S-Y GND
2 Y IN/OUT
1 S IN
R197 0
(See Page 4-28) TO VS-124 BOARD (2/5)
VIDEO I/O
VIDEO I/O GND
D331 MA4082WA (G-13)
(See Page 4-28) TO VS-124 BOARD (2/5)
VTR SCK
VIDEO CS
DATA TO SLVE
SCK1 CS1 SI1
(See Page 4-26) TO VS-124 BOARD (1/5)
2CH BUMP CONT
1CH BUMP CONT
MT Q
MT FD
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
BA35 BA34 BA21 BA22 BA20 BA18 BA36 BA37 BA10
(See Page 4-27) TO VS-124 BOARD (1/5)
PB RF (NORMAL)
AGC SLOW
PB MIX RF
ME MUTE
RP 5V
RP PB MODE
VA PB MODE
RF SWP
DOP
MK3
(See Page 4-27) TO VS-124 BOARD (1/5)
REC ATF RF
FE ON
ME/RP
REC Y RF (L)
REC C RF
VIDEO 4.9V
MK7 MK9
(See Page 4-27) TO VS-124 BOARD (1/5)
REC AFM RF
RP GND
SP/LP
PB 4.9V
SOFT LIM OUT (L)
PB C RF
DOC/JOG
CN203 42P (F-25)
MT GND 42
MT 5V 41
MT GND 40
MT 5V 39
SCK 38
CS CAM 37
DATA TO SLAVE 36
DS VOB 35
DATA TO MSTR 34
DS VOW 33
SYS RESET 32
DDS VOB 31
MAN FOCUS1 30
DDS VOW 29
MAN FOCUS2 28
EVF VOB 27
ZOOM SW 26
EVF VOW 25
PB SYNC 24
CS OSD 23
REG H 22
TG STBY I 21
REG H 20
CAM GND 19
FLD 18
CAM C 17
CS SG 16
CAM GND 15
CAM VD 14
CAM Y 13
FSC 12
CAM GND 11
CAM GND 10
D3.6V 9
CAM GND 8
D3.6V 7
D 5V 6
CAM 5V 5
D 5V 4
CAM 5V 3
CAM -9V 2
CAM 15V 1
TO VC-160 BOARD (3/3) CN601
(See Page 4-16)
CL242 CL243 CL244 CL245 CL246 CL247 CL248 CL249 CL250 CL264 CL267 CL268 CL269 CL270 CL271 CL272 CL273 CL274 CL275 CL296 CL299 CL300 CL301 CL302 CL303 CL304 CL305
CA2 CA1 SCK1 CA25 SI1 EL1 CA24 EL2 CA15 CA19 CA20 CA21 CA26 EL3 CA17 CA10 CA16 CA28 CA18 CA9 CA10 CA7 CA6 CA4 CA3
ZOOM SW
MAN FOCUS1
FLD
MAN FOCUS2
CAM VD
SYS RST
CS CAM
CS OSD
DATA TO MASTER
TALLY
SS 3.6V
VTR SCK
DATA TO SLVE
TO VS-124 BOARD (4/5)
(See Page 4-35)
A IN/OUT
SS GND
SIRCS SIG
SIRCS VCC
AU 5V
AU GND
A MUTE
HP L
HP GND
CS DA
VIDEO CS
EVF DA STB
RP 5V
AGC SLOW
VIDEO 4.9V
VIDEO GND
RP GND
TO VS-124 BOARD (4/5)
(See Page 4-35)
PB RF (NORMAL)
REC ATF RF
FE ON
RF SWP
JOG
ME/RP
PB MIX RF
CAM/CTRL
SP/LP
RP PB MODE
VA PB MODE
JOG VD
VI SWP
V MUTE
VTR SYNC
V IN/OUT
TO VS-124 BOARD (4/5)
(See Page 4-36)
CN206 14P ELCO (A-22)
Y/COMP CONT 14
EVF C 13
TALLY 12
EVF Y 11
EVF GND 10
EVF 15V 9
EVF UNREG 8
EVF UNREG GND 7
DD 6
DD 5
LD 4
EVR CLK 3
DI 2
EVR GND 1
CL319 CL258 CL261 CL316 CL318
A1 A7 A8 A9 A10
TO VF-65 BOARD CN901
(See Page 4-52)
CAM GND
D3.6V
D5V
CAM 5V
CAM -9V
CAM 15V
MT 5V
PB V
TALLY
EVF 5V
EVF 15V
EVF UNREG
EVF UNREG GND
TO VS-124 BOARD (4/5)
(See Page 4-35)
REC C VR
MT 1CH
MT 2CH
MT Q
MT FD
1CH BUMP CONT
2CH BUMP CONT
REC Y
REC LOW CONT
TO VS-124 BOARD (3/5)
(See Page 4-33)
1.5M BEV
1.5M IR
AUDIO FADER
EVF Y OUT
VIDEO 4.9V
TO VS-124 BOARD
(See Page

- Refer to page 4–21 for Printed Wiring Board.


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
J201
(See Page 4-28)
TO VS-124 BOARD (2/5)
(See Page 4-28)
TO VS-124 BOARD (2/5)
(See Page 4-26)
TO VS-124 BOARD (1/5)
(See Page 4-27)
TO VS-124 BOARD (1/5)
(See Page 4-27)
TO VS-124 BOARD (1/5)
(See Page 4-27)
TO VS-124 BOARD (1/5)
(See Page 4-30)
TO VS-124 BOARD (2/5)
(See Page 4-28)
TO VS-124 BOARD (2/5)
(See Page 4-33)
TO VS-124 BOARD (3/5)
VIDEO I/O
VIDEO I/O GND
VTR SCK
VIDEO CS
DATA TO SLVE
MA2Z082XA
FSC
VIDEO GND
V MUTE
PB C RF
JOG
VA PB MODE
DOP
SOFT LIM OUT (E/L)
SS 3.6V
CAM C
REC C RF
+SP/LP
JOG VD
VI SWP
VTR SYNC
VIDEO 4.9V
SP/LP
EE PB Y
DS VDB
DS VDW
AFC H
REC Y RF
V IN/OUT
CAM Y
TO VS-124 BOARD (2/5)
(See Page 4-28)
TO VS-124 BOARD (2/5)
(See Page 4-28)
CN206 14P ELCD (A-22)
TO VF-65 BOARD CN901
(See Page 4-52)
TO VS-124 BOARD (4/5)
(See Page 4-35)
TO VS-124 BOARD (4/5)
(See Page 4-36)
TO VS-124 BOARD (4/5)
(See Page 4-35)
TO VS-124 BOARD (3/5)
(See Page 4-33)
TO VS-124 BOARD (3/5)
(See Page 4-33)
TO VS-124 BOARD (3/5)
(See Page 4-33)
CA17

·SIGNAL PATH

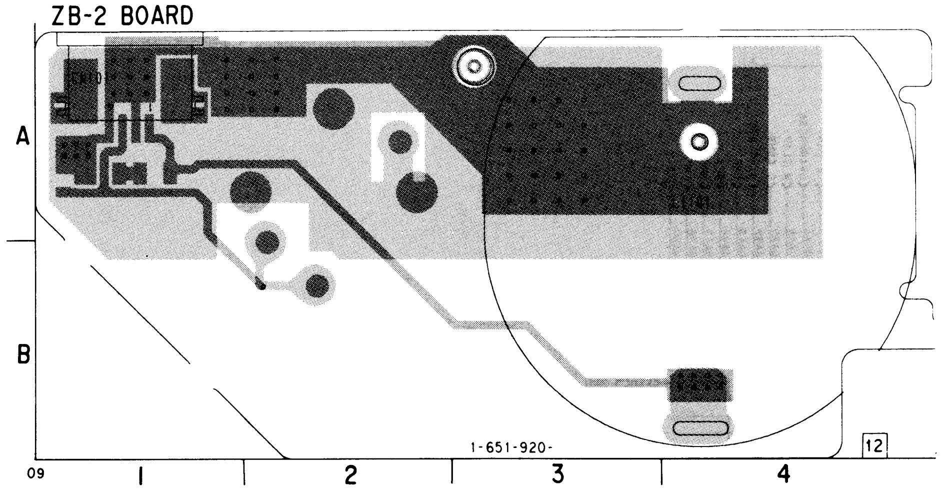
	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		▷

ZB-2 (LITHIUM BATTERY) PRINTED WIRING BOARD

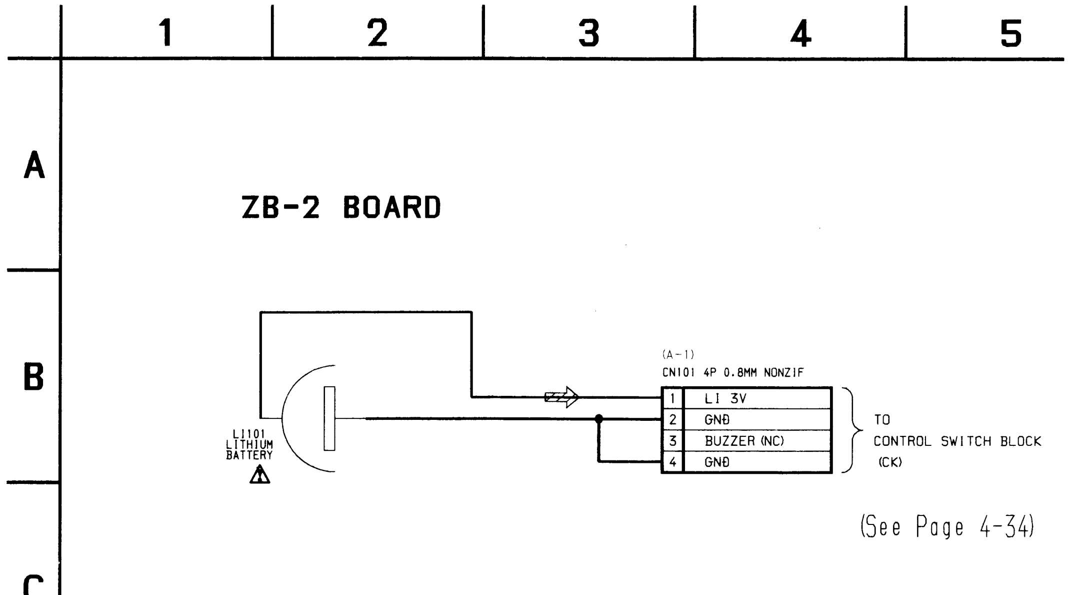
— Ref. No. ZB-2 BOARD: 3,000 series —


ZB-2 BOARD
A
B
1-651-920-
12
09
1
2
3
4

ZB-2 (LITHIUM BATTERY) SCHEMATIC DIAGRAM

— Ref. No. ZB-2 BOARD: 3,000 series —

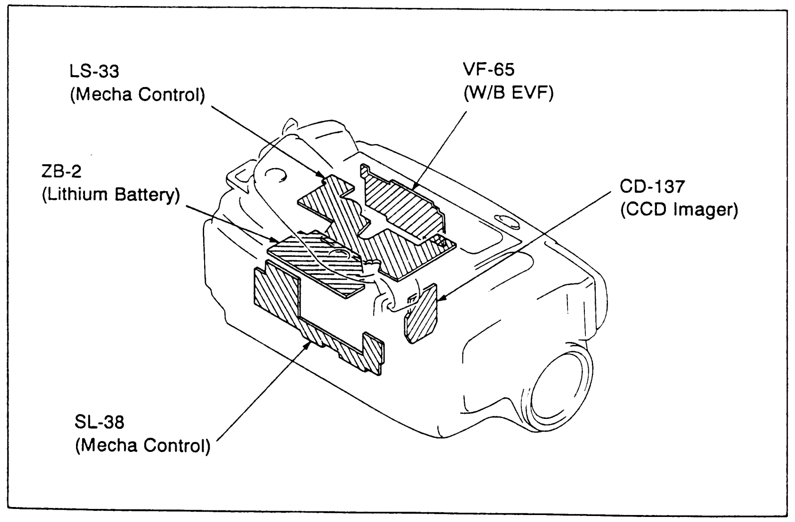
- **For printed wiring board of ZB-2 board.**
- ▨ : Pattern from the side which enable seeing.
- ░ : Pattern of the rear side.


1
2
3
4
5
A
B
C
ZB-2 BOARD
(A-1)
CN101 4P 0.8MM NONZIF
1 LI 3V
2 GND
3 BUZZER (NC)
4 GND
TO CONTROL SWITCH BLOCK (CK)
LI101 LITHIUM BATTERY
⚠
(See Page 4-34)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

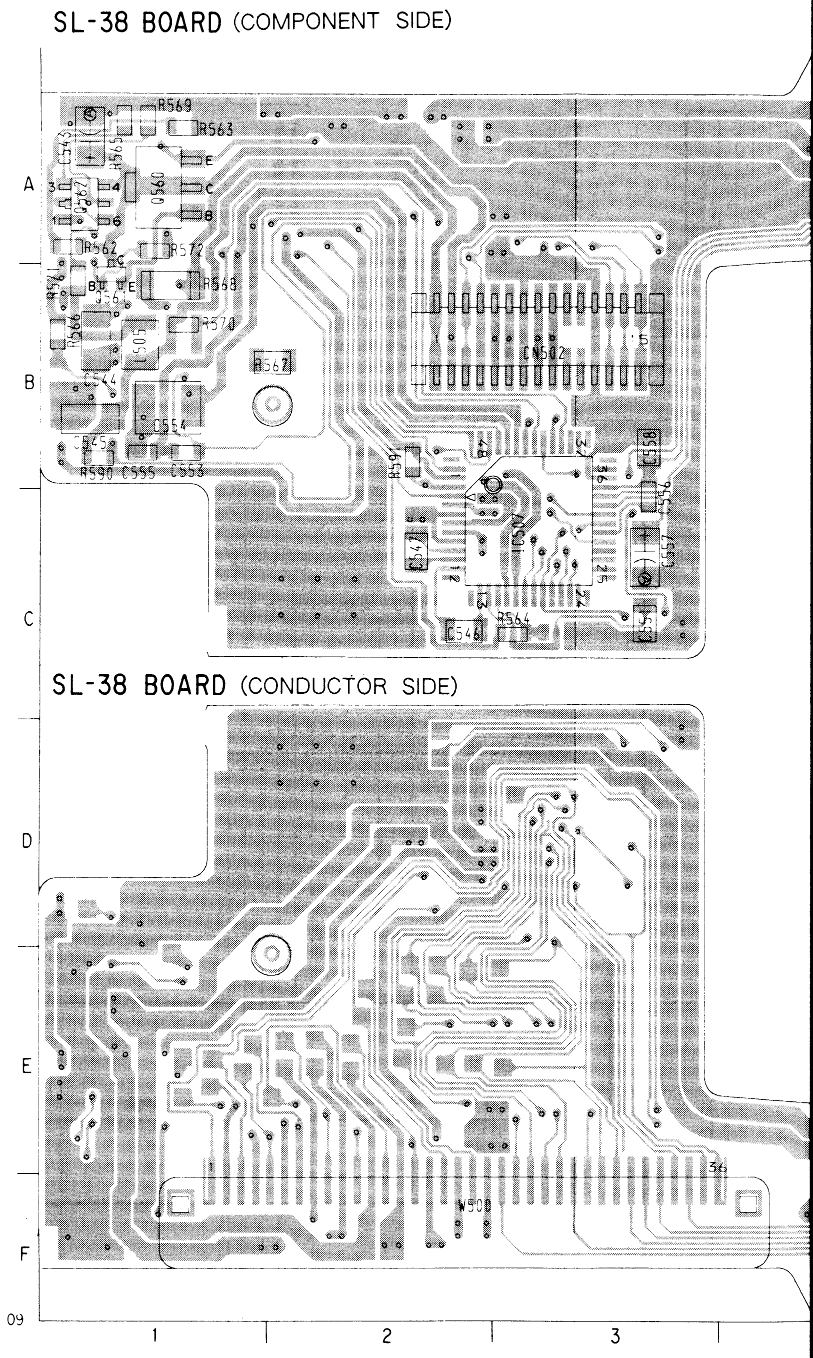
D

09


LS-33
(Mecha Control)
VF-65
(W/B EVF)
ZB-2
(Lithium Battery)
CD-137
(CCD Imager)
SL-38
(Mecha Control)

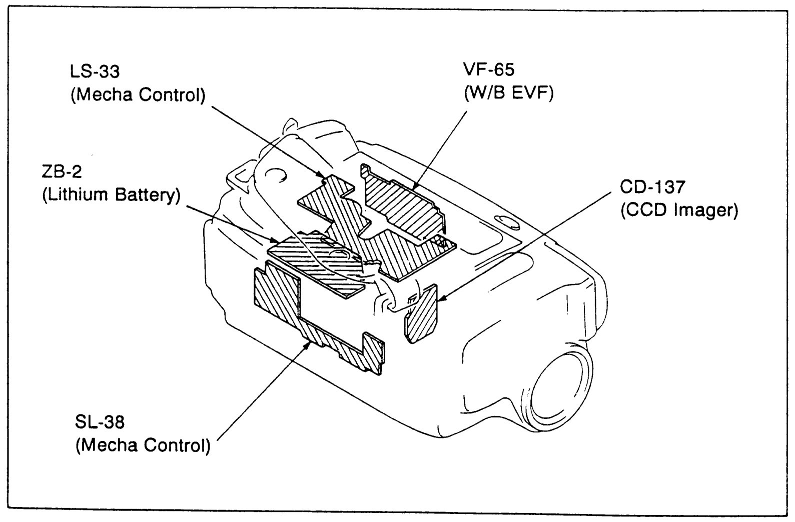
SL-38 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-38 BOARD: 3,000 series, LS-33 BOARD: 6,000 series —


SL-38 BOARD (COMPONENT SIDE)

SL-38 BOARD (CONDUCTOR SIDE)

R569
R563
R560
R562
R572
R568
R570
R567
CN502
C554
C555
C553
R590
R591
R564
C546
C547
C558
C557
36
A
B
C
D
E
F
09
1
2
3


LS-33
(Mecha Control)
VF-65
(W/B EVF)
ZB-2
(Lithium Battery)
CD-137
(CCD Imager)
SL-38
(Mecha Control)

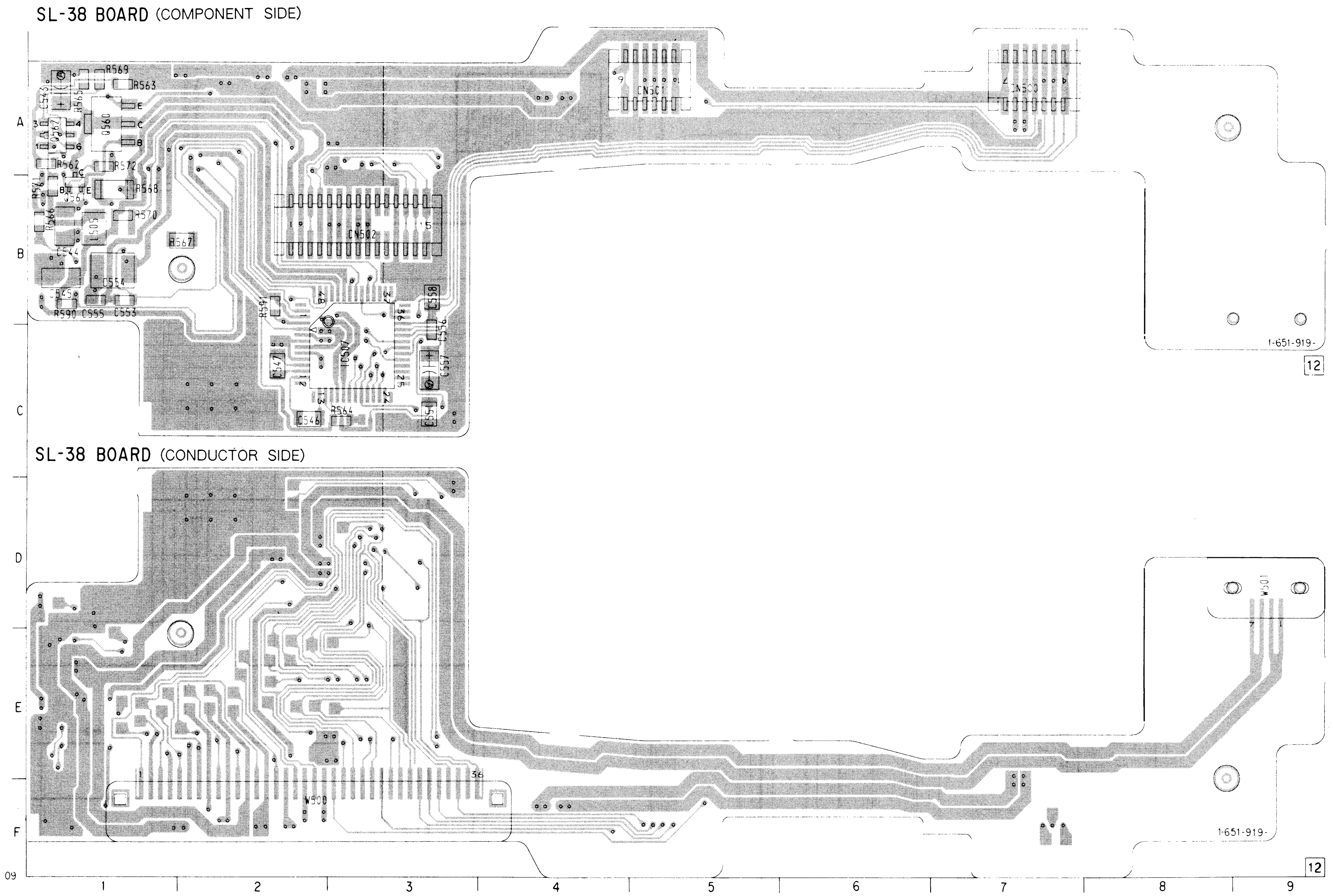
board.

ble seeing.

SL-38 (MECHA CONTROL) PRINTED WIRING BOARD

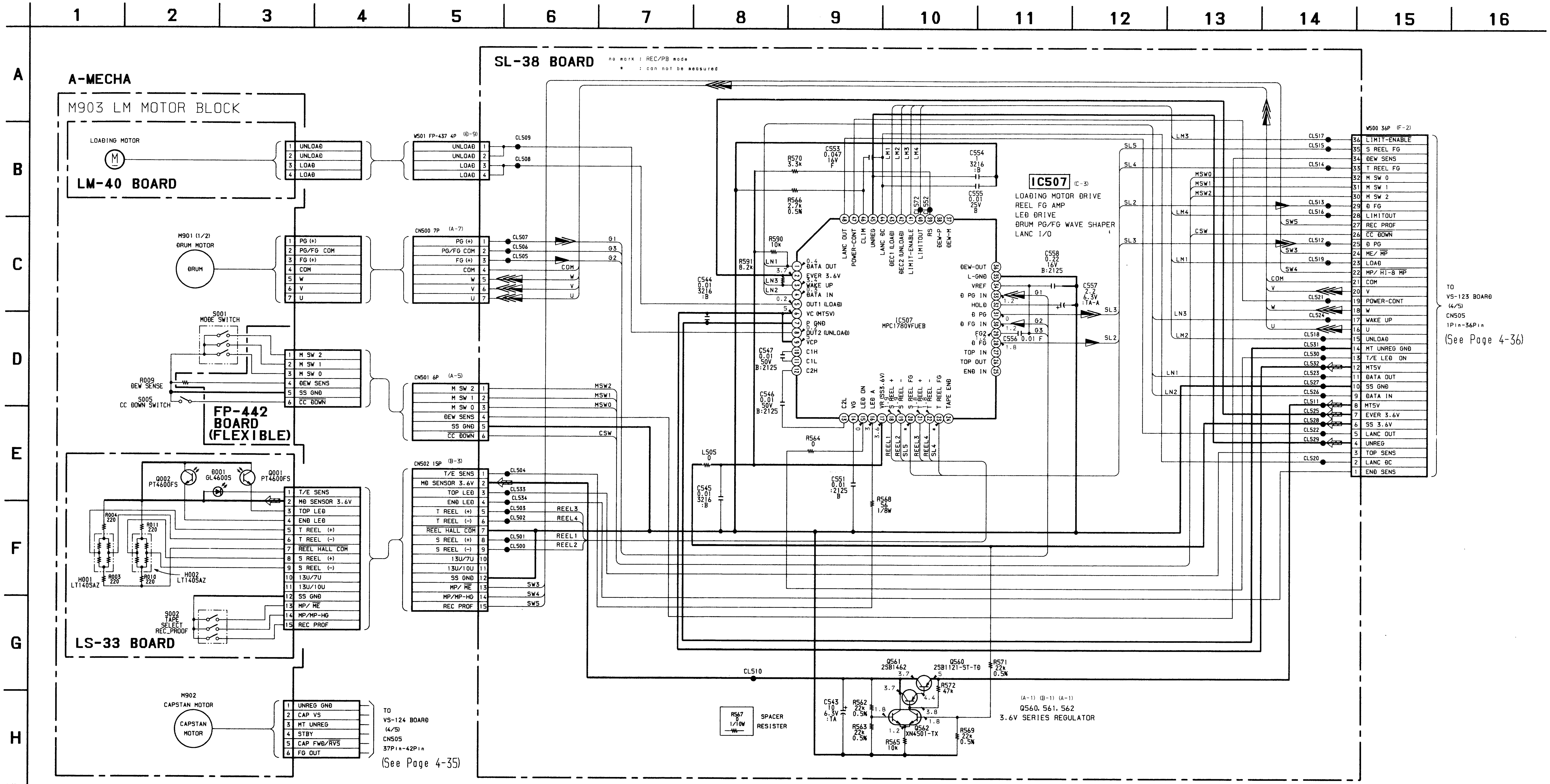
— Ref. No. SL-38 BOARD: 3,000 series, LS-33 BOARD: 6,000 series —

- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.


SL-38 BOARD (COMPONENT SIDE)
SL-38 BOARD (CONDUCTOR SIDE)
R569
R563
C543
R565
Q560
R567
R562
R572
R568
R570
L505
C554
C555
C553
R590
R567
CN502
CN501
CN500
R591
IC501
C558
C556
C557
C547
C548
R564
C551
W500
W501
1-651-919-
12
A
B
C
D
E
F
09
1
2
3
4
5
6
7
8
9

SL-38 (MECHA CONTROL), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (TAPE SENSOR) SCHEMATIC DIAGRAM

— Ref. No. SL-38 BOARD: 3,000 series, LS-33 BOARD: 6,000 series —



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
M901 (1/2) DRUM MOTOR
S001 MODE SWITCH
R009 DEW SENSE
S005 CC DOWN SWITCH
FP-442 BOARD (FLEXIBLE)
LS-33 BOARD
S002 TAPE SELECT REC_PROOF
M902 CAPSTAN MOTOR
SL-38 BOARD
no mark : REC/PB mode
* : can not be measured
IC507
LOADING MOTOR DRIVE
REEL FG AMP
LED DRIVE
DRUM PG/FG WAVE SHAPER
LANC I/O
IC507 MPC1780VFUEB
Q561 2SB1462
Q560 2SB1121-ST-TD
Q562 XN4501-TX
(A-1) (B-1) (A-1)
Q560, 561, 562
3.6V SERIES REGULATOR
SPACER RESISTER
W500 36P (F-2)
TO VS-123 BOARD (4/5) CN505 1Pin-36Pin
(See Page 4-36)
TO VS-124 BOARD (4/5) CN505 37Pin-42Pin
(See Page 4-35)

·Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	

LITHIUM BATTERY

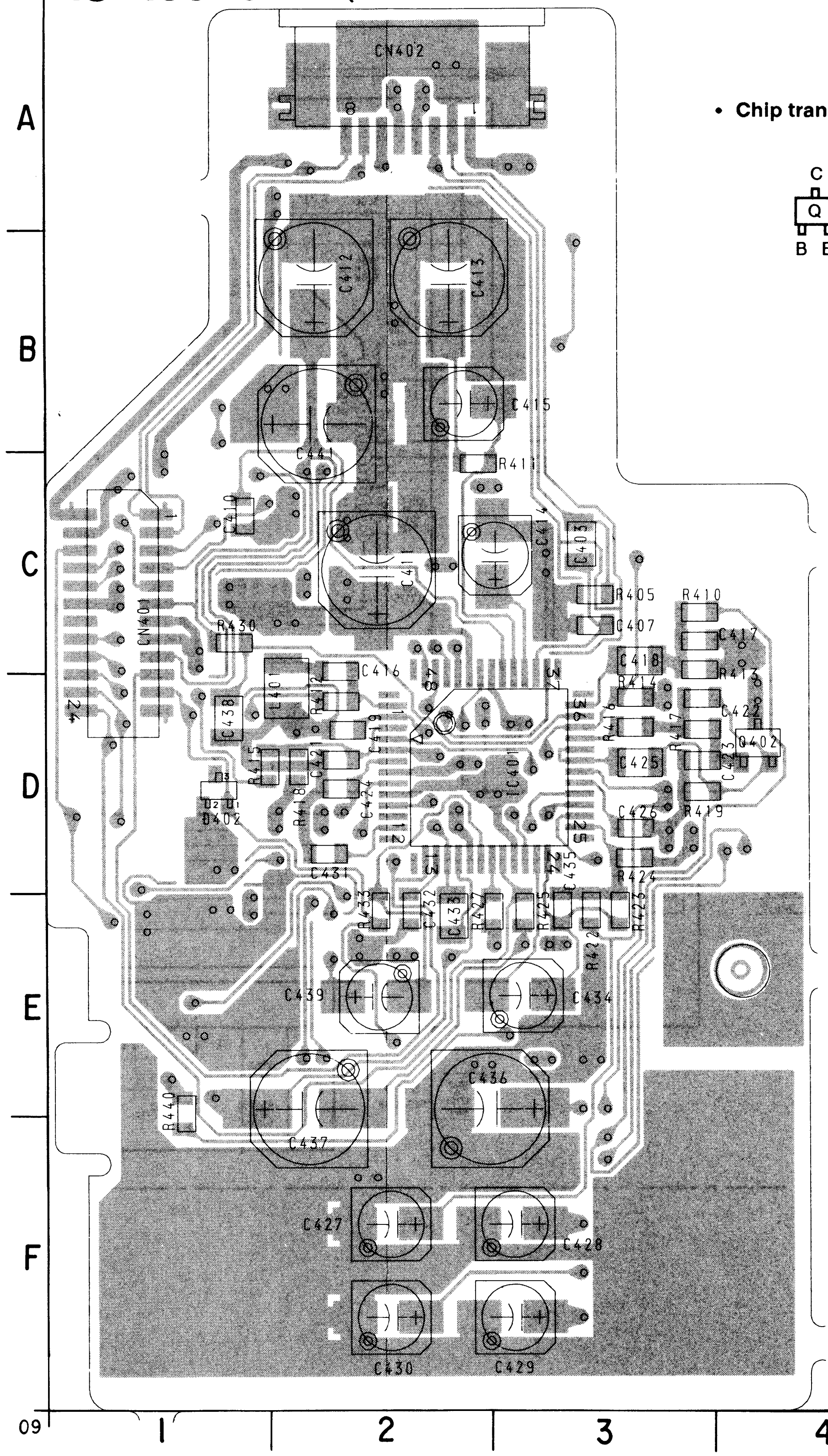
AU-183 (AUDIO) PRINTED WIRING BOARD

— Ref. No. AU-183 BOARD: 3,000 series —

- **For printed wiring boards.**
- AU-183 board is a four-layer printed board. However, the patterns of layers 2 to 3 have not been included in the diagram.

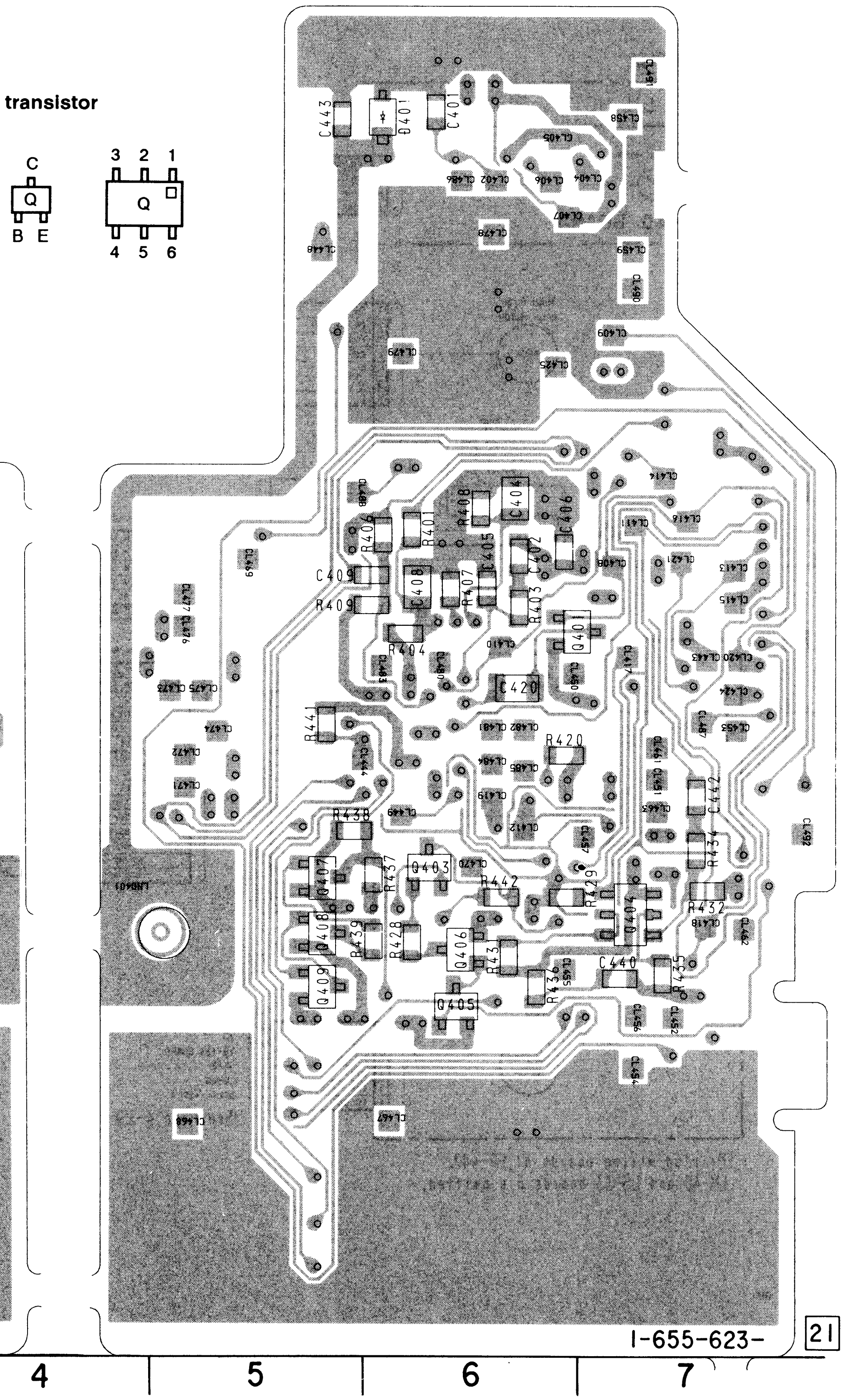
There are few cases that the part isn't mounted in this model is printed on this diagram.

AU-183 BOARD (COMPONENT SIDE)



A
B
C
D
E
F
1
2
3
4
CN402
CN401
C412
C413
C441
C415
R411
C410
C411
C414
C403
R405
R410
C407
R430
C417
C416
C418
R413
C438
C401
C422
Q402
C425
R419
C426
Q402
R418
C431
C424
R424
C439
C434
C437
C436
R440
C427
C428
C430
C429
09

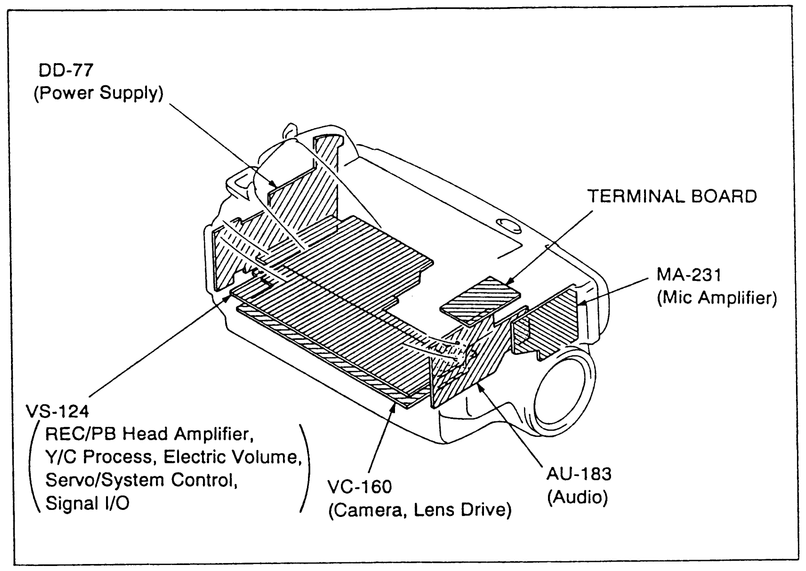
AU-183 BOARD (CONDUCTOR SIDE)



5
6
7
C443
D401
C401
C404
C406
R408
R401
C405
C409
R409
C408
R407
C402
R403
Q401
R404
C420
R441
R420
R438
Q403
R442
R437
R429
R434
C442
Q407
Q408
R439
R428
Q406
R433
Q404
R432
Q409
Q405
R436
C440
R435
1-655-623-
21

- **Chip transistor**

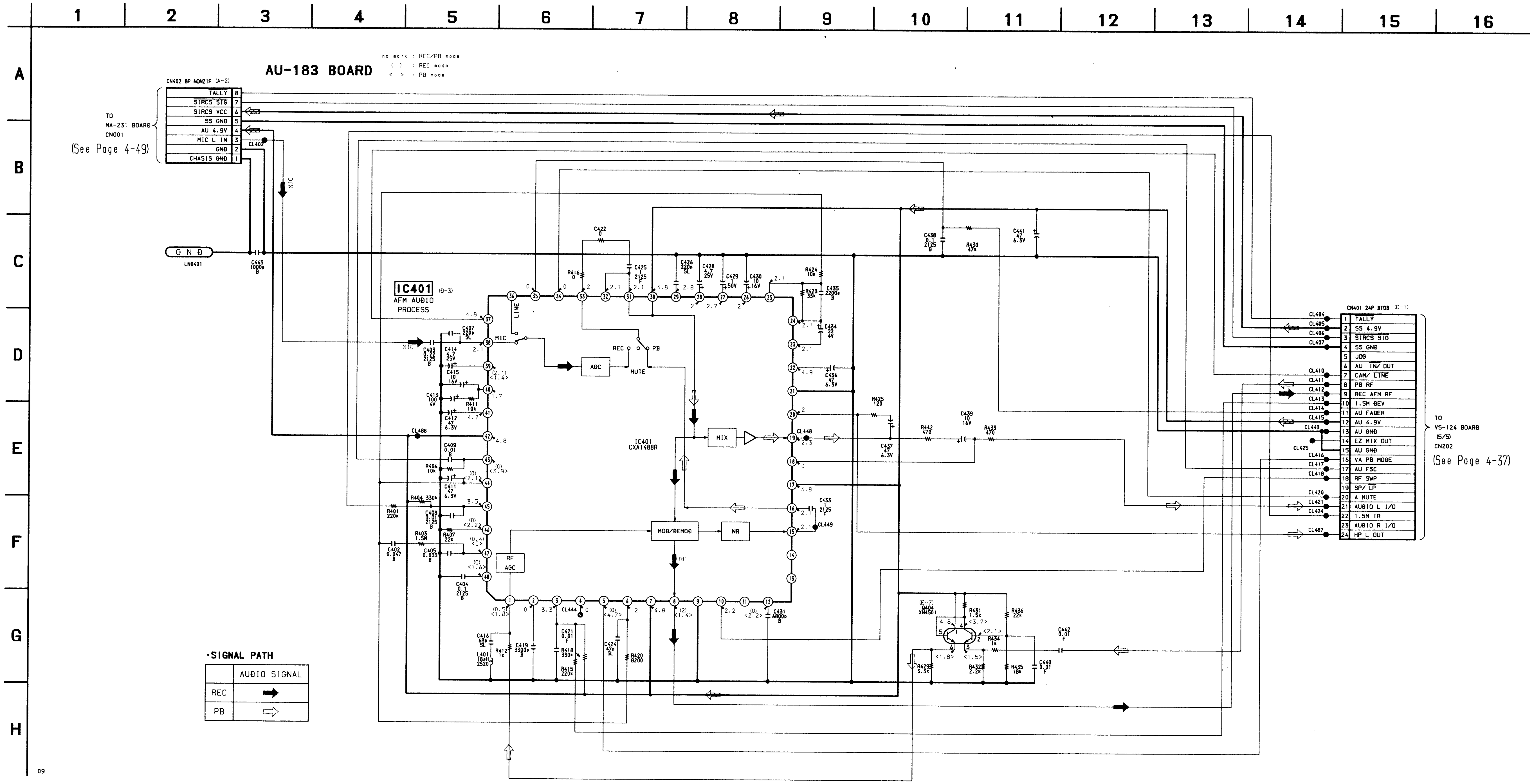
C
Q
B
E
3
2
1
Q
4
5
6



DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)

AU-183 (AUDIO) SCHEMATIC DIAGRAM

— Ref. No. AU-183 BOARD: 3,000 series —


AU-183 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN402 8P NONZIF (A-2)
TALLY 8
SIRCS SIG 7
SIRCS VCC 6
SS GND 5
AU 4.9V 4
MIC L IN 3
GND 2
CHASSIS GND 1
TO MA-231 BOARD CN001
(See Page 4-49)
GND
LN0401
IC401 (D-3)
AFM AUDIO PROCESS
IC401
CXA1488R
AGC
MUTE
MIX
MOD/DEMOD
NR
RF AGC
MIC
LINE
REC
PB
(E-7) Q404 XN4501
CN401 24P BTOB (C-1)
1 TALLY
2 SS 4.9V
3 SIRCS SIG
4 SS GND
5 JOG
6 AU IN/OUT
7 CAM/LINE
8 PB RF
9 REC AFM RF
10 1.5M DEV
11 AU FADER
12 AU 4.9V
13 AU GND
14 EZ MIX OUT
15 AU GND
16 VA PB MODE
17 AU FSC
18 RF SWP
19 SP/LP
20 A MUTE
21 AUDIO L I/O
22 1.5M IR
23 AUDIO R I/O
24 HP L OUT
TO VS-124 BOARD CN202
(See Page 4-37)
09

·SIGNAL PATH

	AUDIO SIGNAL
REC	➡
PB	⇨

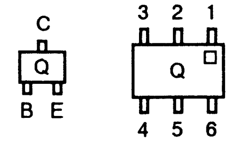
MA-231 (MIC AMPLIFIER) PRINTED WIRING BOARD

— Ref. No. MA-231 BOARD: 3,000 series —

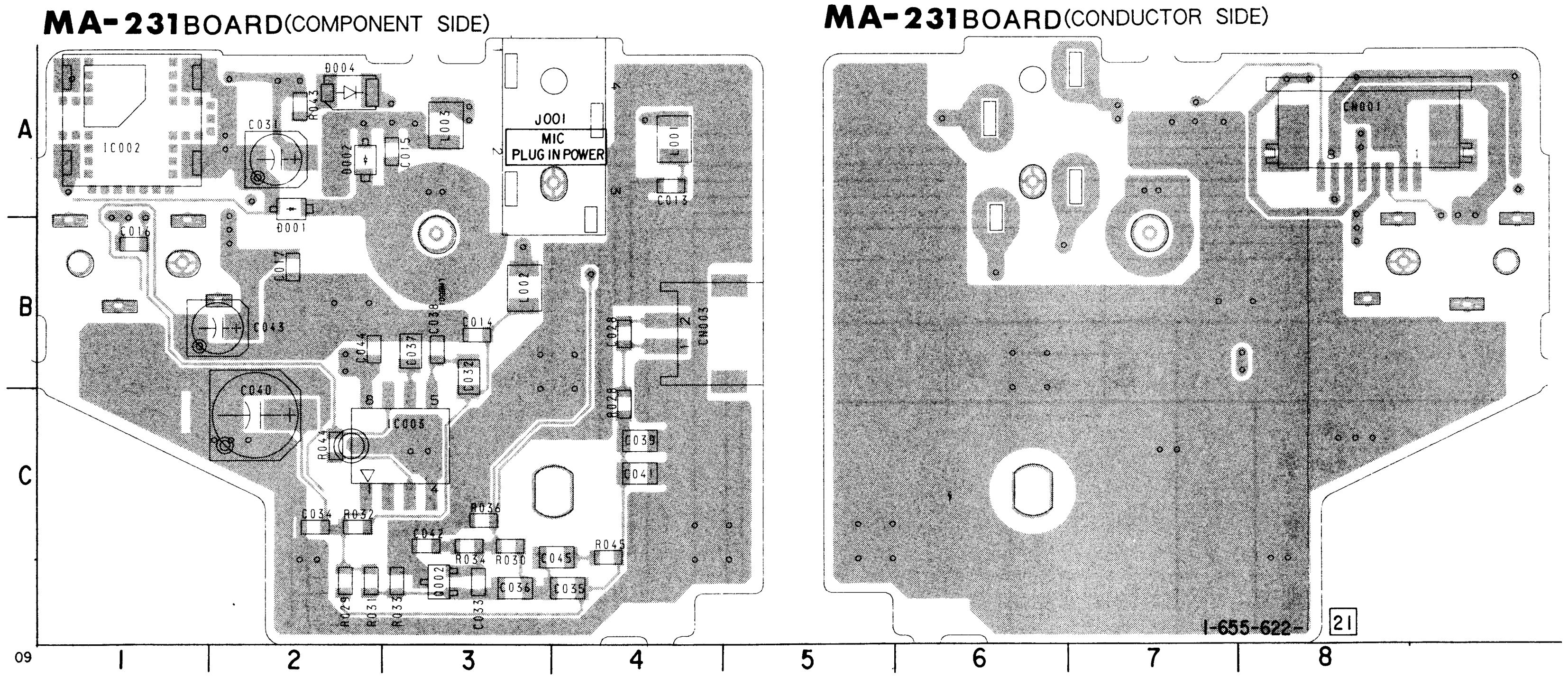
- **For printed wiring boards.**
- MA-231 board is a four-layer printed board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

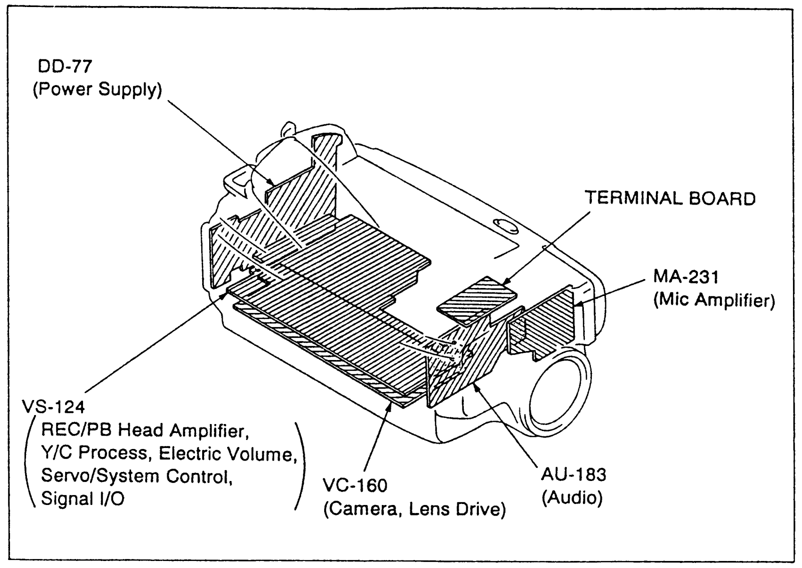
- **Chip transistor**



C
Q
B E
3 2 1
Q
4 5 6



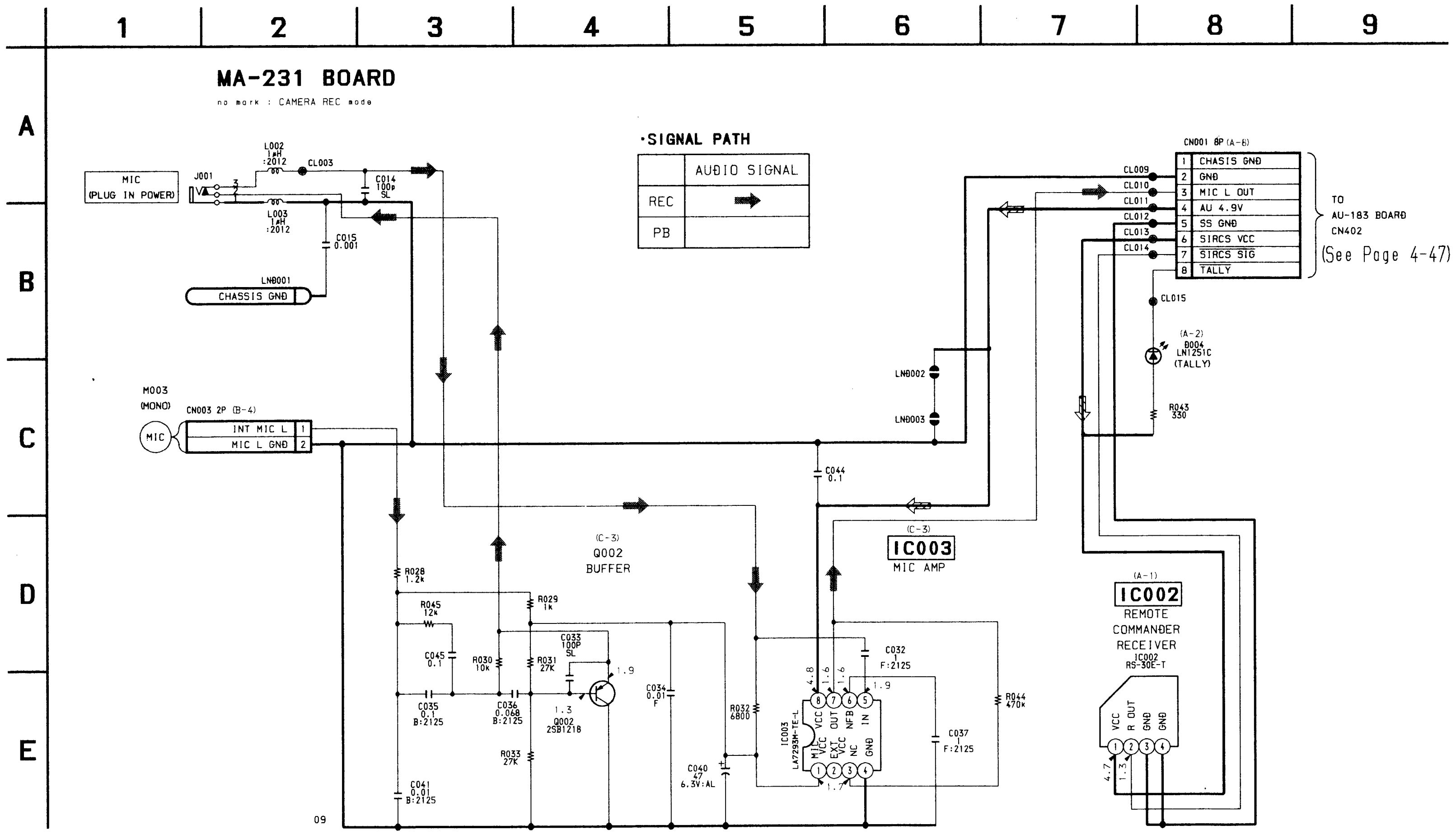
MA-231 BOARD (COMPONENT SIDE)
MA-231 BOARD (CONDUCTOR SIDE)
A
B
C
09
1
2
3
4
5
6
7
8
J001
MIC
PLUG IN POWER
IC002
IC003
CN003
CN001
D004
D002
D001
C031
C040
C043
1-655-622-
21



DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)

MA-231 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. MA-231 BOARD: 3,000 series —



1
2
3
4
5
6
7
8
9
A
B
C
D
E
MA-231 BOARD
no mark : CAMERA REC mode
MIC
(PLUG IN POWER)
J001
L002
1μH
:2012
CL003
L003
1μH
:2012
C014
100p
SL
C015
0.001
LN8001
CHASSIS GND
•SIGNAL PATH
AUDIO SIGNAL
REC
PB
CN001 8P (A-6)
1 CHASSIS GND
2 GND
3 MIC L OUT
4 AU 4.9V
5 SS GND
6 SIRCS VCC
7 SIRCS SIG
8 TALLY
CL009
CL010
CL011
CL012
CL013
CL014
TO
AU-183 BOARD
CN402
(See Page 4-47)
CL015
(A-2)
D004
LN1251C
(TALLY)
R043
330
LN0002
LN0003
M003
(MONO)
MIC
CN003 2P (B-4)
INT MIC L
MIC L GND
C044
0.1
(C-3)
Q002
BUFFER
(C-3)
IC003
MIC AMP
(A-1)
IC002
REMOTE
COMMANDER
RECEIVER
IC002
RS-30E-T
R028
1.2k
R045
12k
R029
1k
C045
0.1
R030
10k
R031
27K
C033
100P
SL
C034
0.01
F
C035
0.1
B:2125
C036
0.068
B:2125
Q002
2SB1218
R033
27K
C041
0.01
B:2125
C040
47
6.3V:AL
R032
6800
IC003
LA7295M-TE-L
C032
1
F:2125
R044
470k
C037
1
F:2125
VCC
R OUT
GND
GND
09

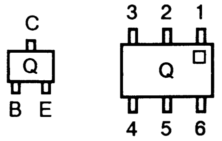
DD-77 (POWER SUPPLY) PRINTED WIRING BOARD

— Ref. No. DD-77 BOARD: 5,000 series —

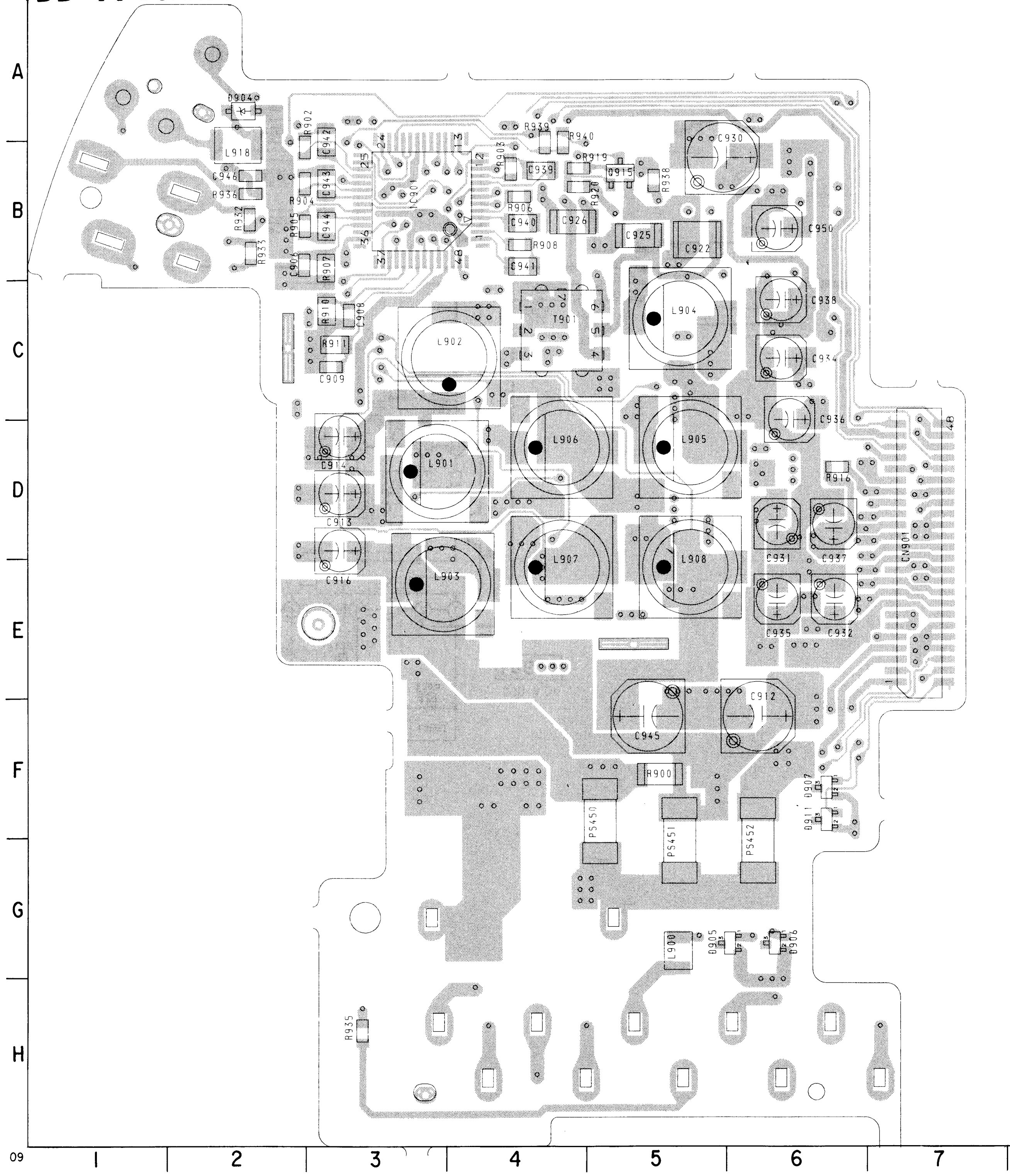
- **For printed wiring boards.**
- DD-77 board is a four-layer printed board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

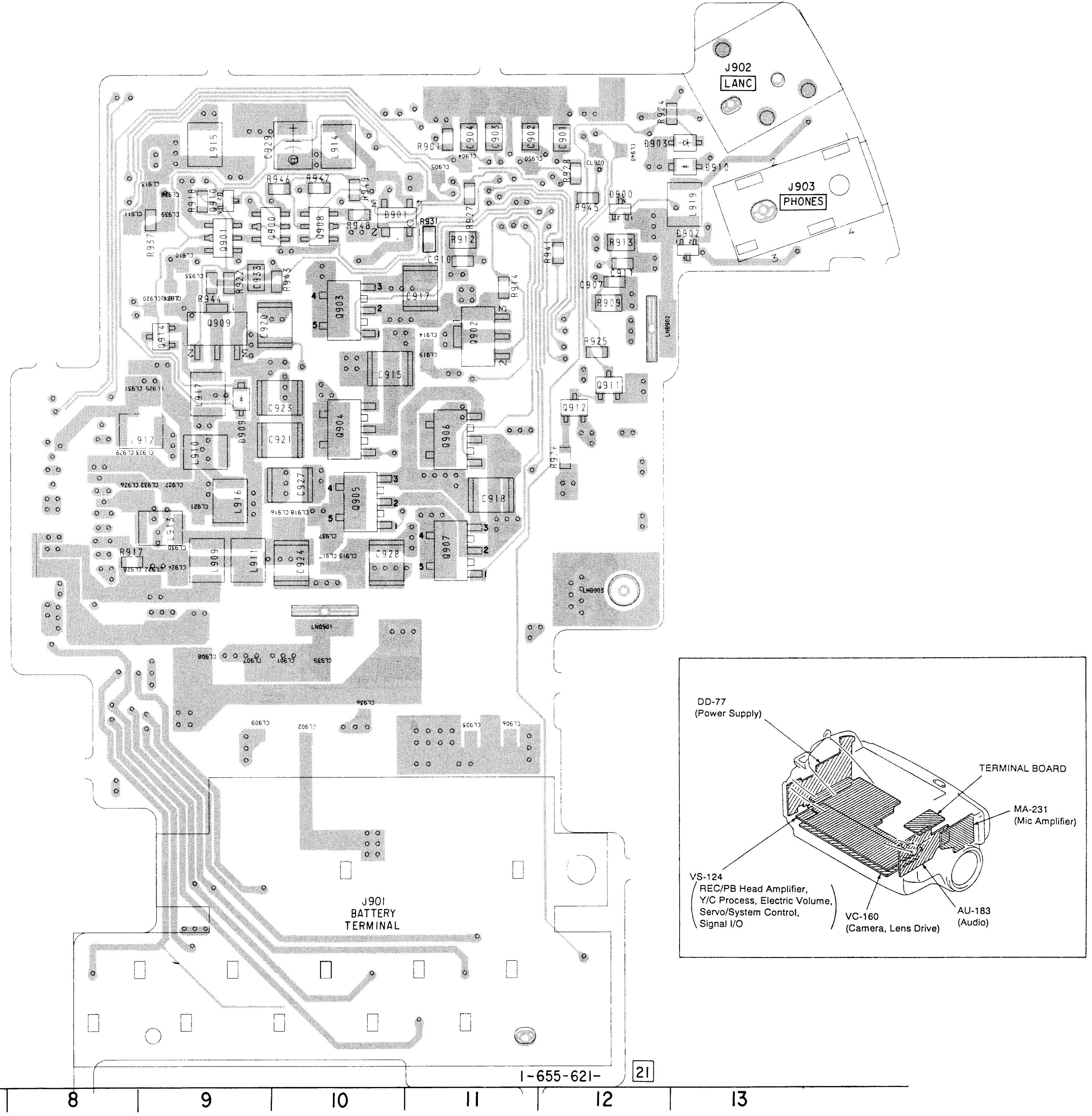
- **Chip transistor**


C
Q
B E
3 2 1
Q
4 5 6

DD-77 BOARD (COMPONENT SIDE)

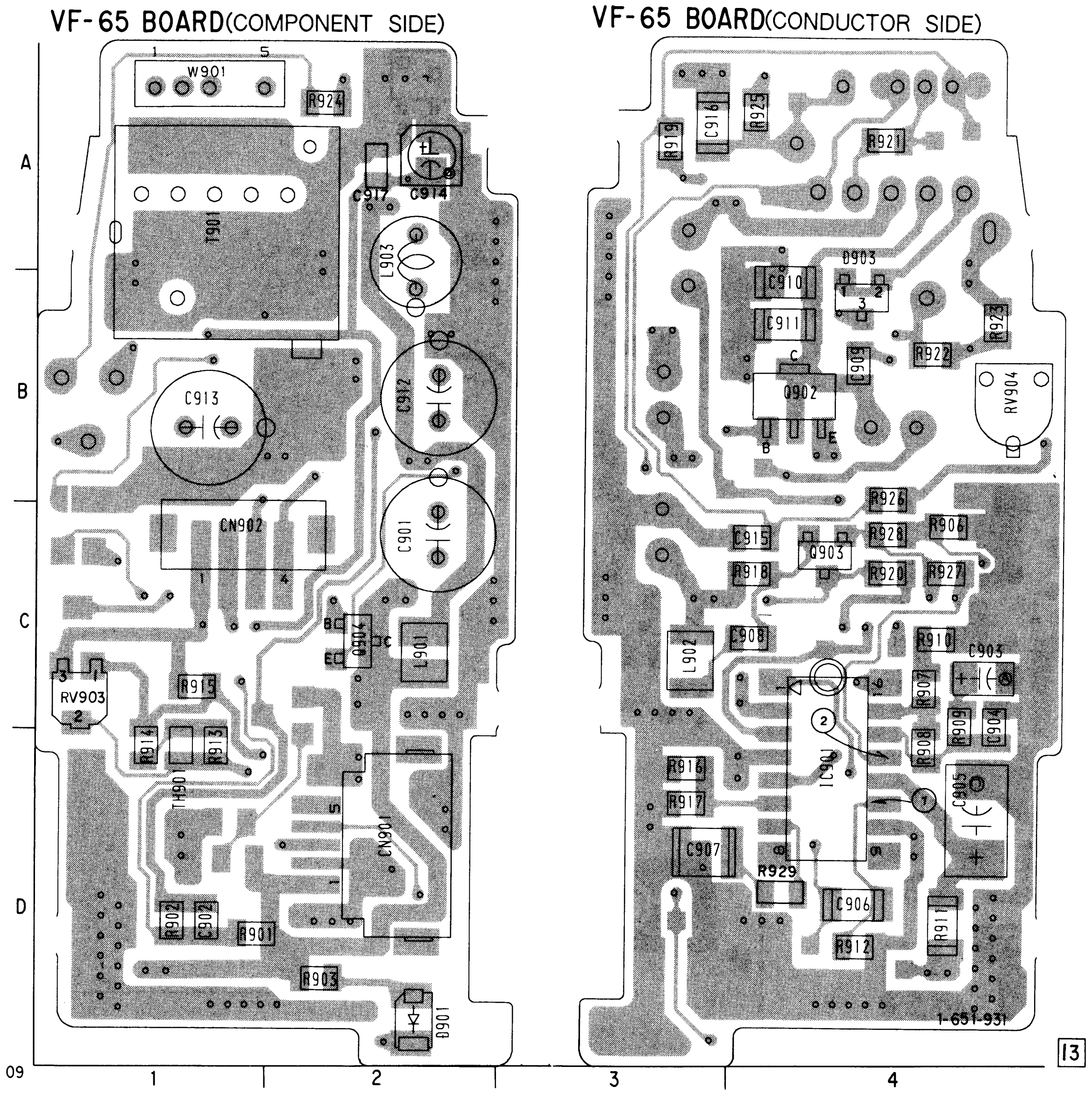

A
B
C
D
E
F
G
H
09
1
2
3
4
5
6
7
L918
L902
L904
L901
L906
L905
L903
L907
L908
T901
C930
C950
C938
C934
C936
C945
C912
R900
PS450
PS451
PS452
CN901
R935
L900

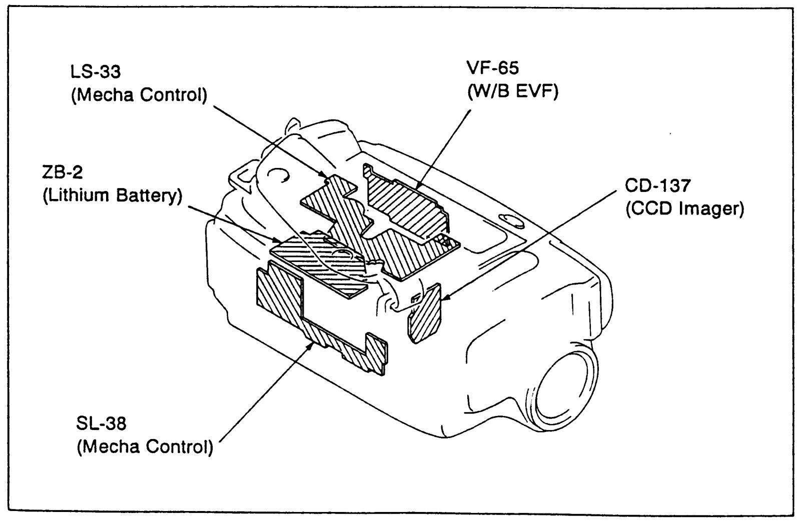
DD-77 BOARD (CONDUCTOR SIDE)


J902
LANC
J903
PHONES
J901
BATTERY
TERMINAL
1-655-621-
21
8
9
10
11
12
13
Q903
Q902
Q904
Q905
Q906
Q907
Q909
DD-77
(Power Supply)
TERMINAL BOARD
MA-231
(Mic Amplifier)
VS-124
REC/PB Head Amplifier,
Y/C Process, Electric Volume,
Servo/System Control,
Signal I/O
VC-160
(Camera, Lens Drive)
AU-183
(Audio)

VF-65 (W/B VIEWFINDER) PRINTED WIRING BOARD

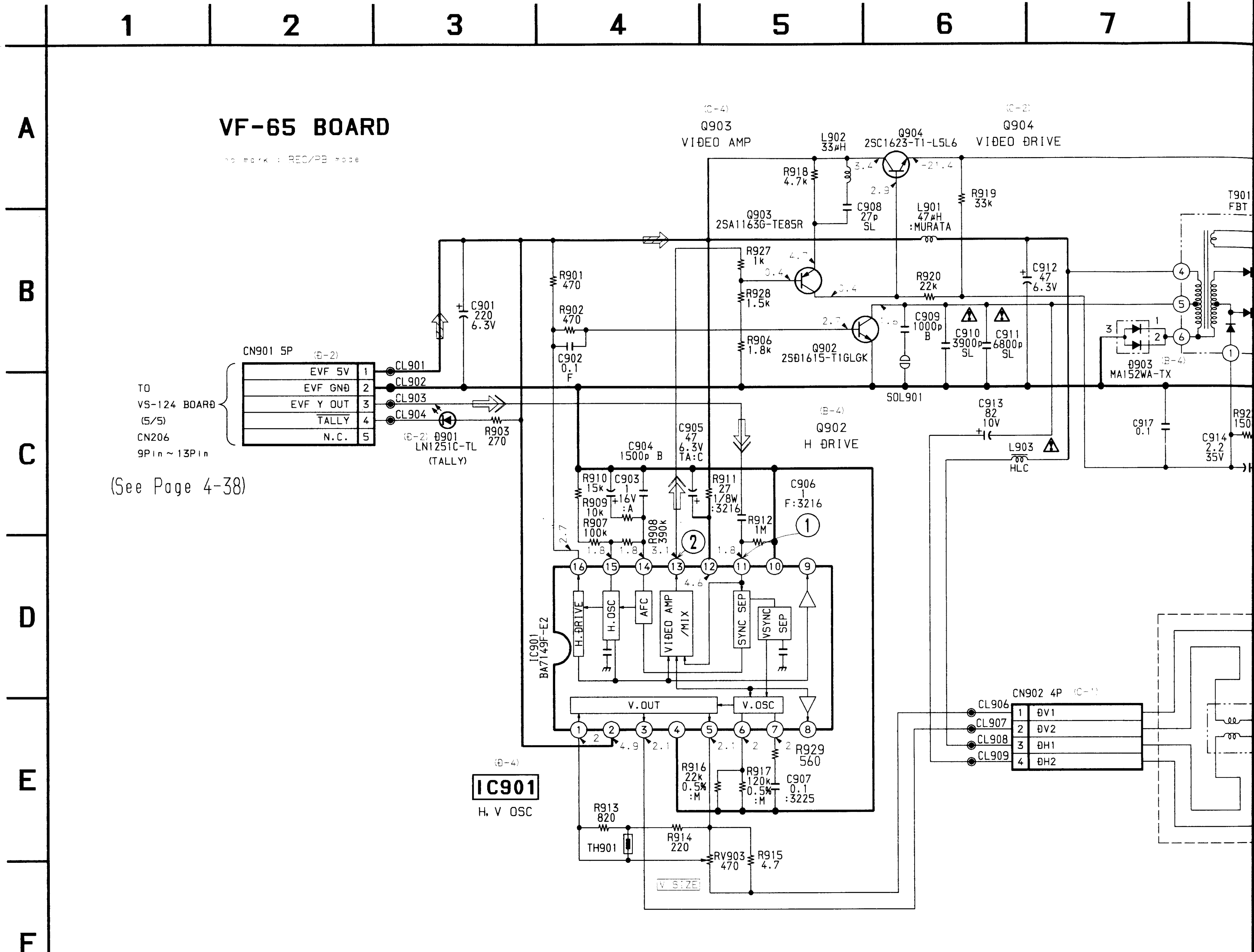
— Ref. No. VF-65 BOARD: 4,000 series —


VF-65 BOARD(COMPONENT SIDE)
VF-65 BOARD(CONDUCTOR SIDE)
W901
T901
L903
C913
C912
C901
CN902
RV903
TH901
CN901
D901
IC901
Q902
Q903
Q904
RV904
1-651-931
A
B
C
D
1
2
3
4
13
09


LS-33
(Mecha Control)
VF-65
(W/B EVF)
ZB-2
(Lithium Battery)
CD-137
(CCD Imager)
SL-38
(Mecha Control)

VF-65 (W/B VIEWFINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-65 BOARD: 4,000 series —


VF-65 BOARD
Q903
VIDEO AMP
Q904
VIDEO DRIVE
Q904
2SC1623-T1-L5L6
Q903
2SA1163G-TE85R
Q902
2SD1615-T1GLGK
Q902
H DRIVE
L901
47μH
:MURATA
T901
FBT
D903
MA152WA-TX
CN901 5P
EVF 5V
EVF GND
EVF Y OUT
TALLY
N.C.
TO
VS-124 BOARD
(5/5)
CN206
9Pin ~ 13Pin
(See Page 4-38)
D901
LN1251C-TL
(TALLY)
IC901
BA7149F-E2
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC901
H, V OSC
CN902 4P
DV1
DV2
DH1
DH2
L903
HLC
TH901
RV903
V SIZE
1
2
3
4
5
6
7
A
B
C
D
E
F
G
09

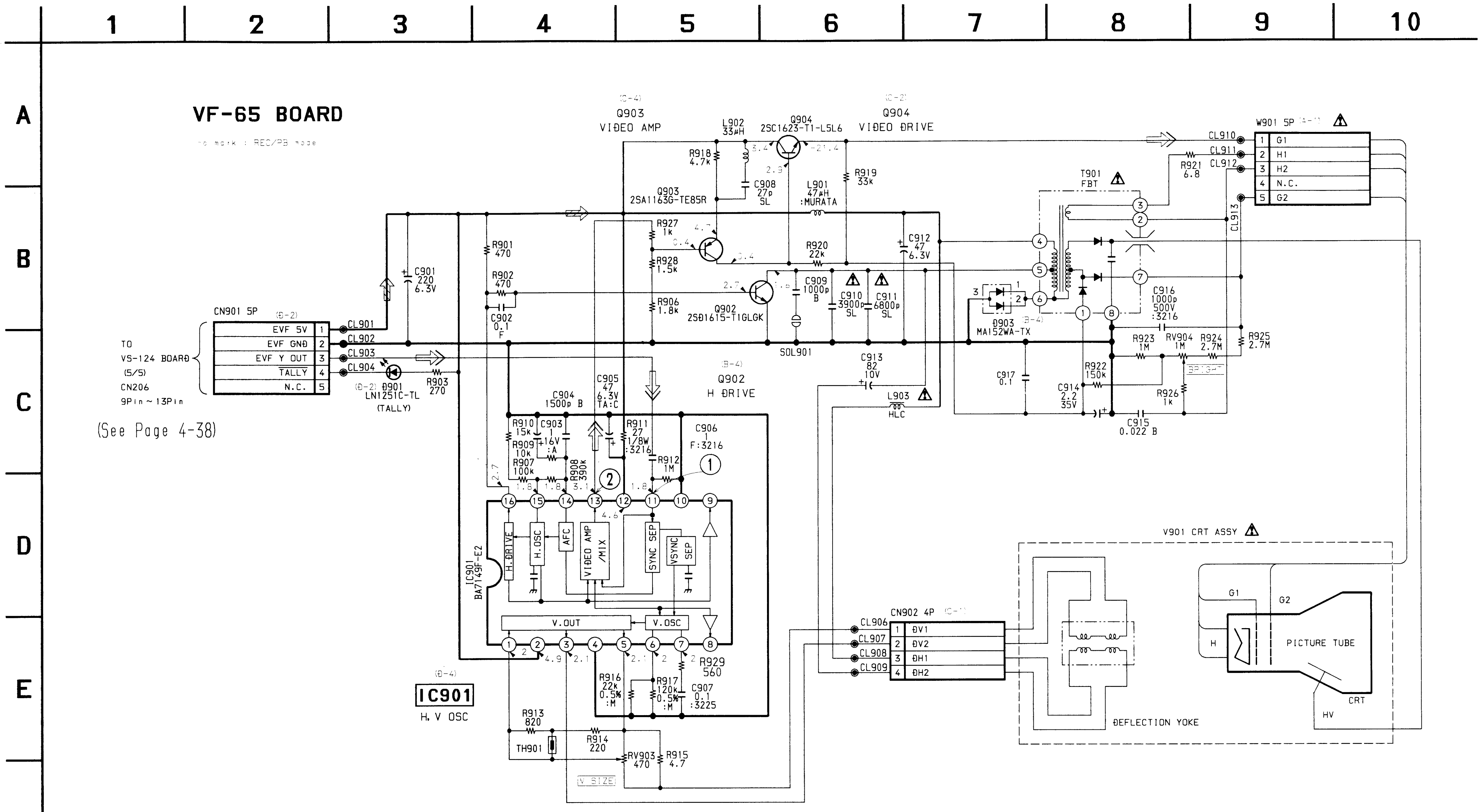
·SIGNAL PATH

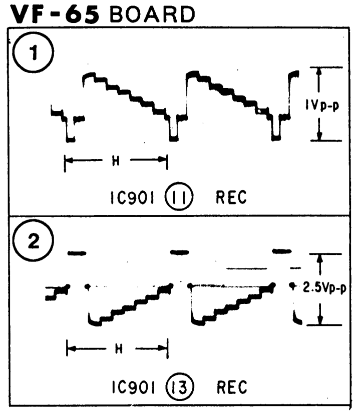
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB		⇨	

Note:
The components
mark ⚠ are c
Replace only w

VF-65 (W/B VIEWFINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-65 BOARD: 4,000 series —


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
VF-65 BOARD
no mark : REC/PB mode
Q903
VIDEO AMP
L902
33μH
Q904
2SC1623-T1-L5L6
Q904
VIDEO DRIVE
R918
4.7k
C908
27p
SL
Q903
2SA1163G-TE85R
L901
47μH
:MURATA
R919
33k
R927
1k
R928
1.5k
R920
22k
C912
47
6.3V
R901
470
R902
470
C902
0.1
F
C901
220
6.3V
R906
1.8k
Q902
2SD1615-T1GLGK
C909
1000p
B
C910
3900p
SL
C911
6800p
SL
SOL901
CN901 5P
EVF 5V
EVF GND
EVF Y OUT
TALLY
N.C.
CL901
CL902
CL903
CL904
TO
VS-124 BOARD
(5/5)
CN206
9Pin ~ 13Pin
(See Page 4-38)
D901
LN1251C-TL
(TALLY)
R903
270
C904
1500p B
C905
47
6.3V
TA:C
Q902
H DRIVE
C913
82
10V
L903
HLC
R910
15k
C903
1
16V
:A
R909
10k
R907
100k
R908
390k
R911
27
1/8W
:3216
C906
1
F:3216
R912
1M
IC901
BA7149F-E2
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
R916
22k
0.5k
:M
R917
120k
0.5k
:M
C907
0.1
:3225
R929
560
IC901
H. V OSC
R913
820
TH901
R914
220
RV903
470
R915
4.7
V SIZE
T901
FBT
W901 5P
CL910
CL911
CL912
CL913
G1
H1
H2
N.C.
G2
R921
6.8
D903
MA152WA-TX
C916
1000p
500V
:3216
R923
1M
RV904
1M
R924
2.7M
R925
2.7M
BRIGHT
R926
1k
C917
0.1
R922
150k
C914
2.2
35V
C915
0.022 B
V901 CRT ASSY
CN902 4P
CL906
CL907
CL908
CL909
DV1
DV2
DH1
DH2
DEFLECTION YOKE
G1
G2
H
PICTURE TUBE
CRT
HV



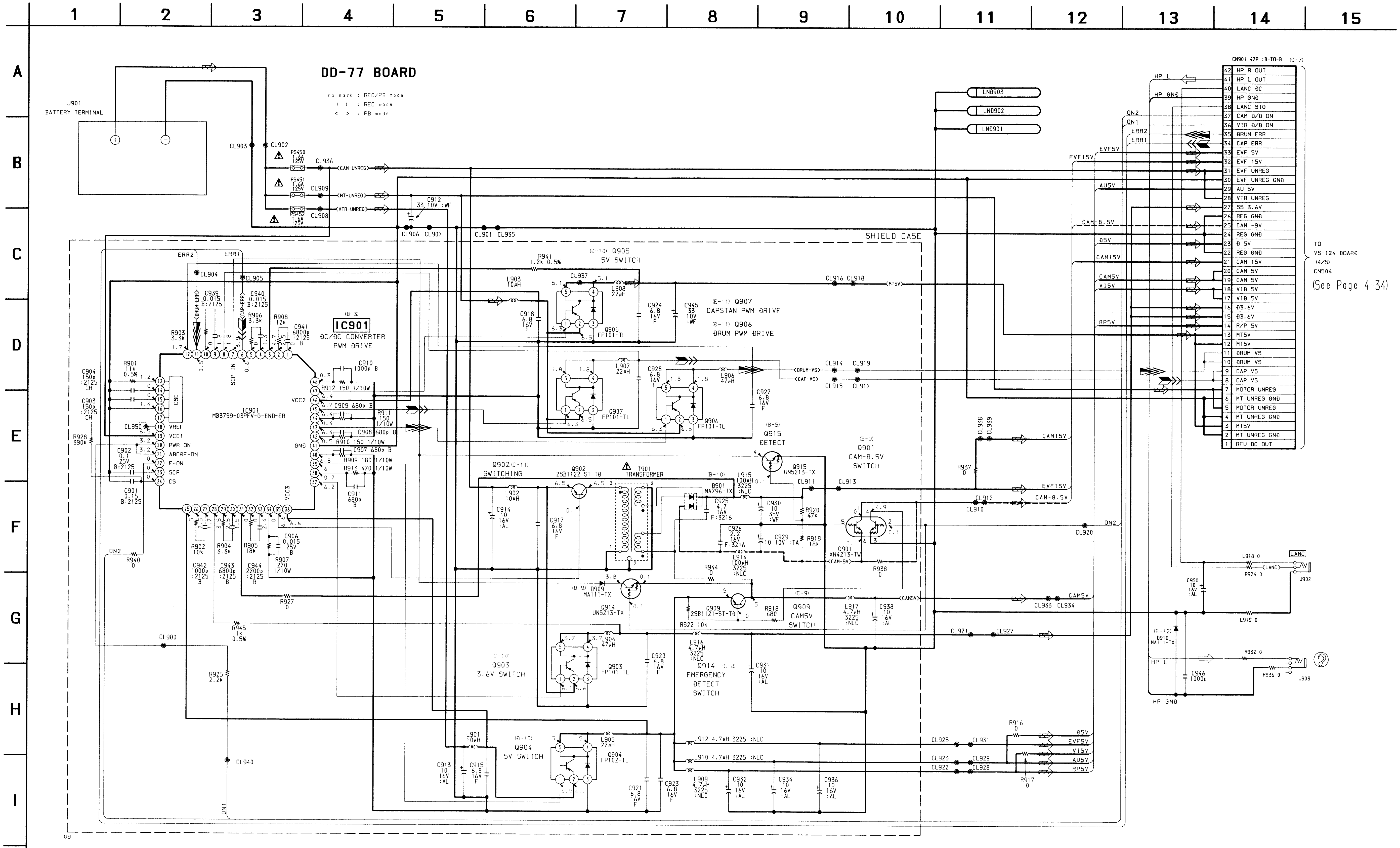
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB		⇨	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DD-77 (POWER SUPPLY) SCHEMATIC DIAGRAM

— Ref. No. DD-77 BOARD: 5,000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
DD-77 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
J901
BATTERY TERMINAL
CL903
CL902
PS450 1.6A 125V
PS451 1.6A 125V
PS452 1.6A 125V
CL936
CL909
CL908
<CAM-UNREG>
<MT-UNREG>
<VTR-UNREG>
C912 33 10V :WF
CL906 CL907
CL901 CL935
SHIELD CASE
ERR2
ERR1
CL904
CL905
C939 0.015 B:2125
C940 0.015 B:2125
R903 3.3k
R906 3.3k
R908 12k
C941 6800p :2125 B
(B-3)
IC901
DC/DC CONVERTER
PWM DRIVE
C910 1000p B
IC901
MB3799-03PFV-G-BND-ER
OSC
VREF
VCC1
PWR ON
ABCDE-ON
F-ON
SCP
CS
SCP-IN
VCC2
VCC3
GND
R912 150 1/10W
C909 680p B
R911 150 1/10W
C908 680p B
R910 150 1/10W
C907 680p B
R909 180 1/10W
R913 470 1/10W
C911 680p B
C904 150p :2125 CH
C903 150p :2125 CH
R901 11k 0.5%
CL950
R928 390k
C902 0.1 25V B:2125
C901 0.15 B:2125
R902 10k
R904 3.3k
R905 18k
C906 0.015 25V B
R907 270 1/10W
C942 1000p :2125 B
C943 6800p :2125 B
C944 2200p :2125 B
R927 0
ON2
R940 0
R945 1k 0.5%
CL900
R925 2.2k
CL940
ON1
R941 1.2k 0.5%
(D-10) Q905
5V SWITCH
L903 10µH
CL937
L908 22µH
C918 6.8 16V F
Q905 FP101-TL
C924 6.8 16V F
C945 33 10V :WF
(E-11) Q907
CAPSTAN PWM DRIVE
(D-11) Q906
DRUM PWM DRIVE
CL916 CL918
<MT5V>
L907 22µH
C928 6.8 16V F
L906 47µH
Q907 FP101-TL
Q906 FP101-TL
C927 6.8 16V F
<DRUM-VS>
<CAP-VS>
CL914 CL919
CL915 CL917
(B-5)
Q915
DETECT
Q915 UN5213-TX
Q902 (C-11)
SWITCHING
Q902 2SB1122-ST-TD
T901 TRANSFORMER
L902 10µH
C914 10 16V :AL
C917 6.8 16V F
(B-10) D901 MA796-TX
L915 100µH 3225 :NLC
C925 4.7 16V F:3216
C930 10 35V :WF
C926 2.2 16V F:3216
C929 10 10V :TA
R920 47k
R919 18k
CL911
CL913
(B-9)
Q901
CAM-8.5V
SWITCH
Q901 XN4213-TW
<CAM-9V>
R938 0
L914 100µH 3225 :NLC
R944 0
(B-9) Q909 MA111-TX
Q914 UN5213-TX
Q909 2SB1121-ST-TD
R918 680
(C-9)
Q909
CAM5V
SWITCH
R922 10k
L917 4.7µH 3225 :NLC
C938 10 16V :AL
<CAM5V>
L904 47µH
C920 6.8 16V F
(D-10)
Q903
3.6V SWITCH
Q903 FP101-TL
L916 4.7µH 3225 :NLC
Q914 (C-8)
EMERGENCY
DETECT
SWITCH
C931 10 16V :AL
L901 10µH
(D-10)
Q904
5V SWITCH
L905 22µH
Q904 FP102-TL
C913 10 16V :AL
C915 6.8 16V F
C921 6.8 16V F
C923 6.8 16V F
L912 4.7µH 3225 :NLC
L910 4.7µH 3225 :NLC
L909 4.7µH 3225 :NLC
C932 10 16V :AL
C934 10 16V :AL
C936 10 16V :AL
CL925 CL931
CL923 CL929
CL922 CL928
R916 0
R917 0
D5V
EVF5V
V15V
AU5V
RP5V
CL921 CL927
CL933 CL934
CAM5V
CL938 CL939
CAM15V
R937 0
EVF15V
CAM-8.5V
CL912
CL910
CL920
ON2
LND903
LND902
LND901
HP L
HP GND
ON2
ON1
ERR2
ERR1
EVF5V
EVF15V
AU5V
CAM-8.5V
D5V
CAM15V
CAM5V
V15V
RP5V
CN901 42P :B-TO-B (E-7)
42 HP R OUT
41 HP L OUT
40 LANC DC
39 HP GND
38 LANC SIG
37 CAM D/D ON
36 VTR D/D ON
35 DRUM ERR
34 CAP ERR
33 EVF 5V
32 EVF 15V
31 EVF UNREG
30 EVF UNREG GND
29 AU 5V
28 VTR UNREG
27 SS 3.6V
26 REG GND
25 CAM -9V
24 REG GND
23 D 5V
22 REG GND
21 CAM 15V
20 CAM 5V
19 CAM 5V
18 V10 5V
17 V10 5V
16 D3.6V
15 D3.6V
14 R/P 5V
13 MT5V
12 MT5V
11 DRUM VS
10 DRUM VS
9 CAP VS
8 CAP VS
7 MOTOR UNREG
6 MT UNREG GND
5 MOTOR UNREG
4 MT UNREG GND
3 MT5V
2 MT UNREG GND
1 RFU DC OUT
TO
VS-124 BOARD
(4/5)
CN504
(See Page 4-34)
L918 0
<LANC>
LANC
R924 0
J902
C950 10 16V :AL
L919 0
(B-12) D910 MA111-TX
HP L
R932 0
R936 0
C946 1000p
J903
HP GND
09

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

•SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

•SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		➢	
Capstan servo (speed and phase)		➢»	

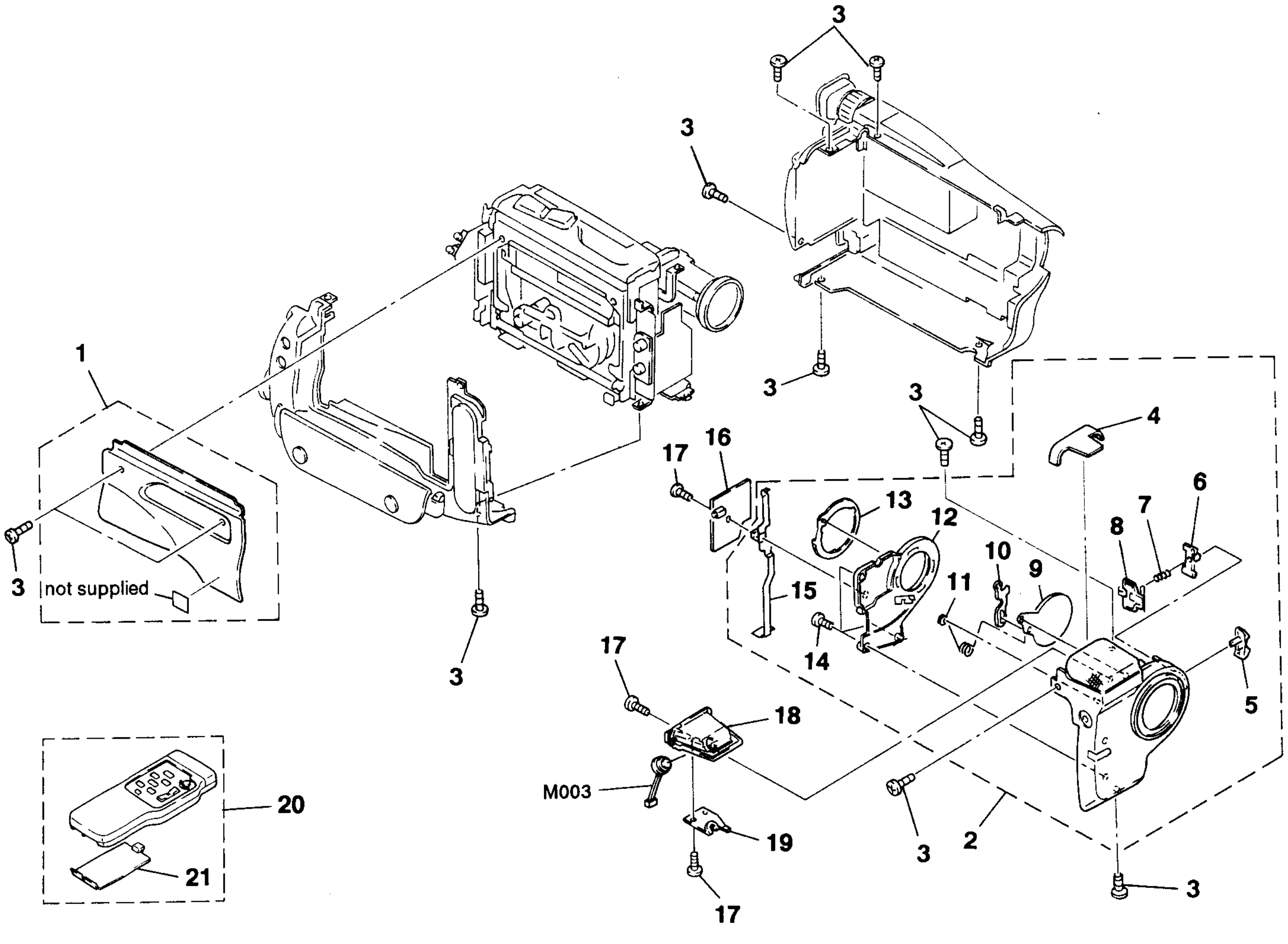
SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Hong Kong model is abbreviated as HK.
Australian model is abbreviated as AUS.
Tourist model is abbreviated as JE.

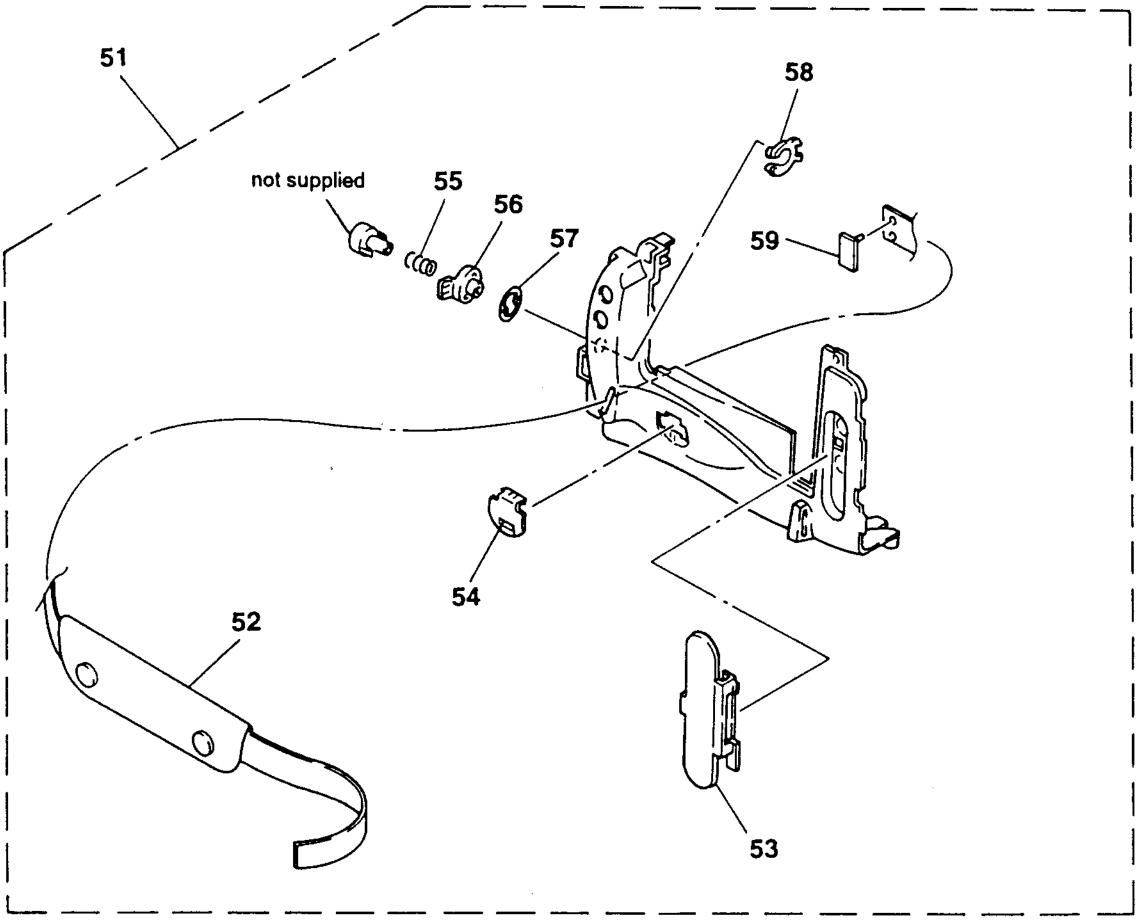
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1-1. F PANEL BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3944-802-1	LID ASSY, CASSTTE	
2	X-3944-804-1	PANEL ASSY, FRONT	
3	3-719-381-01	SCREW (M2X4)	
4	3-958-610-01	CAP (M), MICROPHONE	
5	3-958-614-01	SWITCH, POWER	
6	3-958-633-01	BUTTON, POWER PUSH	
7	3-303-973-01	SPRING, COMPRESSION	
∗ 8	3-958-609-01	PLATE, FUNCTION, POWER	
9	3-958-616-01	COVER, LENS	
∗ 10	3-958-632-01	LEVER, LC	
11	3-958-637-01	SPRING, LC	
∗ 12	3-958-605-01	RETAINER, LC	
∗ 13	3-958-615-01	RING, DRIVING	
14	3-719-601-01	SCREW (B2X5), TAPPING	
∗ 15	3-958-953-01	PLATE, GROUND, MA	
∗ 16	A-7066-379-A	MA-231P BOARD, COMPLETE	
17	3-948-339-01	SCREW, TAPPING	
18	X-3944-801-1	HOLDER ASSY, MICROPHONE	
∗ 19	3-962-382-01	RETAINER (H), MICROPHONE	
20	1-467-574-21	REMOTE COMMANDER (RMT-708)(TR380E)	
21	3-958-131-01	LID, BATTERY CASE (for RMT-708)(TR380E)	
M003	1-542-259-11	MICROPHONE, CAP	

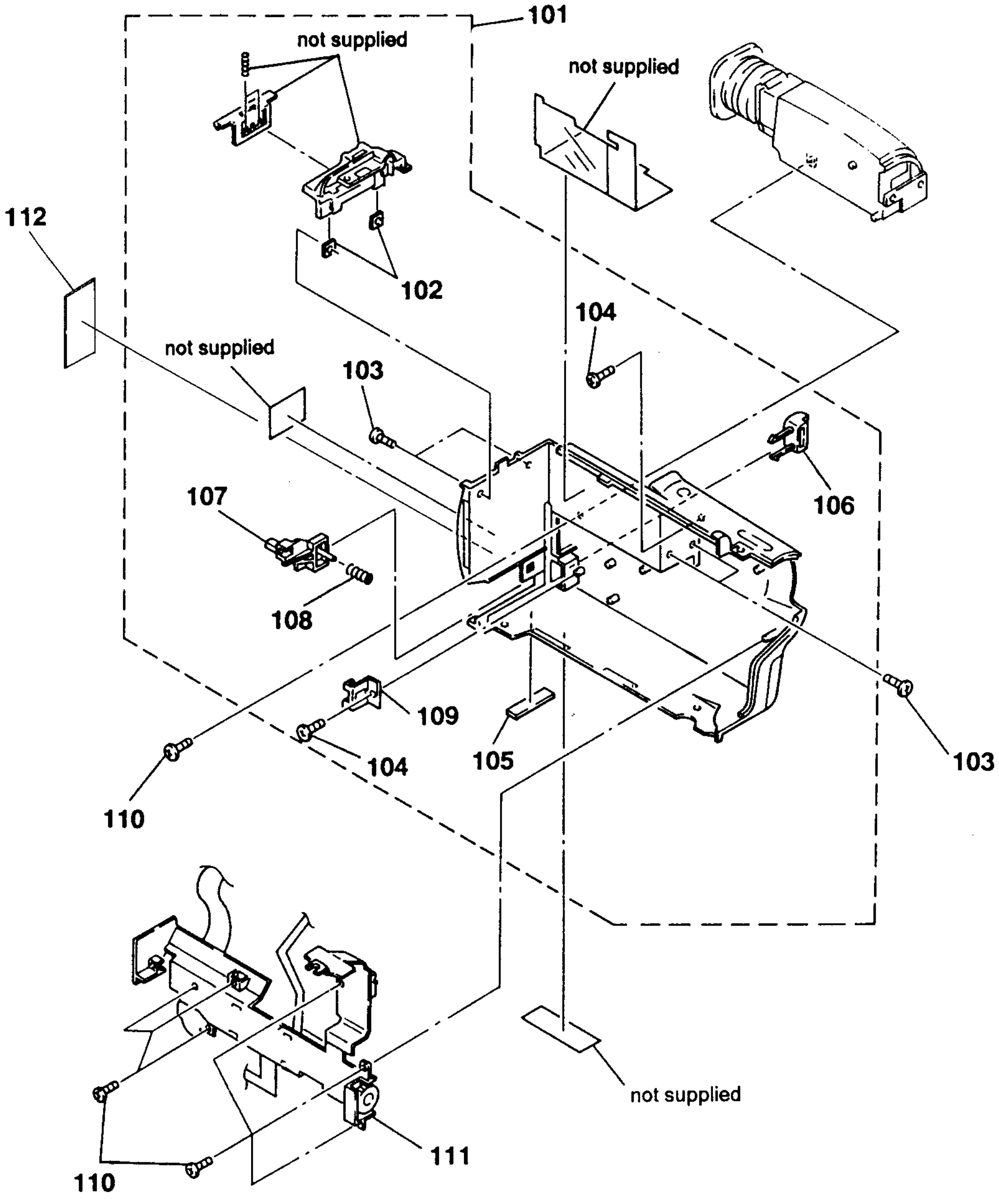
5-1-2. CABINET (L) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
51	X-3943-924-1	CABINET (L) ASSY	
52	3-736-807-01	BELT, GRIP	
53	3-958-606-01	COVER, JACK	
54	3-958-608-01	LID, LITHIUM POWER	
55	3-578-221-00	SPRING, COMPRESSION	

Ref. No.	Part No.	Description	Remark
56	3-942-985-01	KNOB, STAND-BY	
57	3-736-364-01	SPRING	
58	3-942-953-01	HOLDER, STAND-BY KNOB	
59	3-942-895-01	STOPPER, BELT	

5-1-3. CABINET (R) BLOCK ASSEMBLY



101
not supplied
not supplied
112
102
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not supplied
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108
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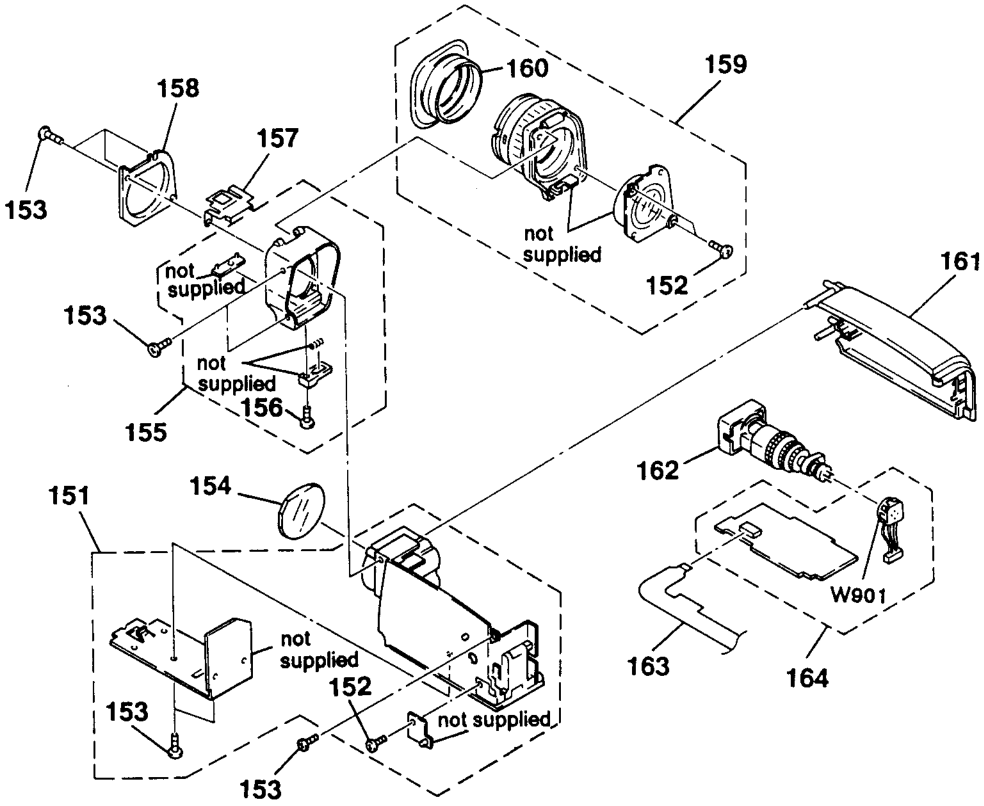
104
105
103
110
110
111
not supplied

Ref. No.	Part No.	Description	Remark
101	X-3944-968-1	CABINET (R) ASSY (TR380E)	
101	X-3945-298-1	CABINET (R) ASSY (TR370E)	
102	3-718-233-01	NUT, PLATE	
103	3-719-381-01	SCREW (M2X4)	
104	3-719-601-01	SCREW (B2X5), TAPPING	
105	3-949-008-01	SHEET, FOOT	
106	3-958-618-01	BUTTON, BATTERY RELEASE	
107	3-958-620-01	CLAW, BATTERY LOCK	
108	3-426-508-00	SPRING, COMPRESSION	
109	3-958-650-01	RETAINER, BATTERY RELEASE	
110	3-948-339-01	SCREW, TAPPING	
111	1-467-676-11	SWITCH BLOCK, CONTROL (CK)	
* 112	3-704-235-01	LABEL, CAUTION (TR370E:UK/TR380E:UK)	

5-1-4. EVF BLOCK ASSEMBLY


160
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not supplied
152
161
not supplied
153
not supplied
156
155
162
151
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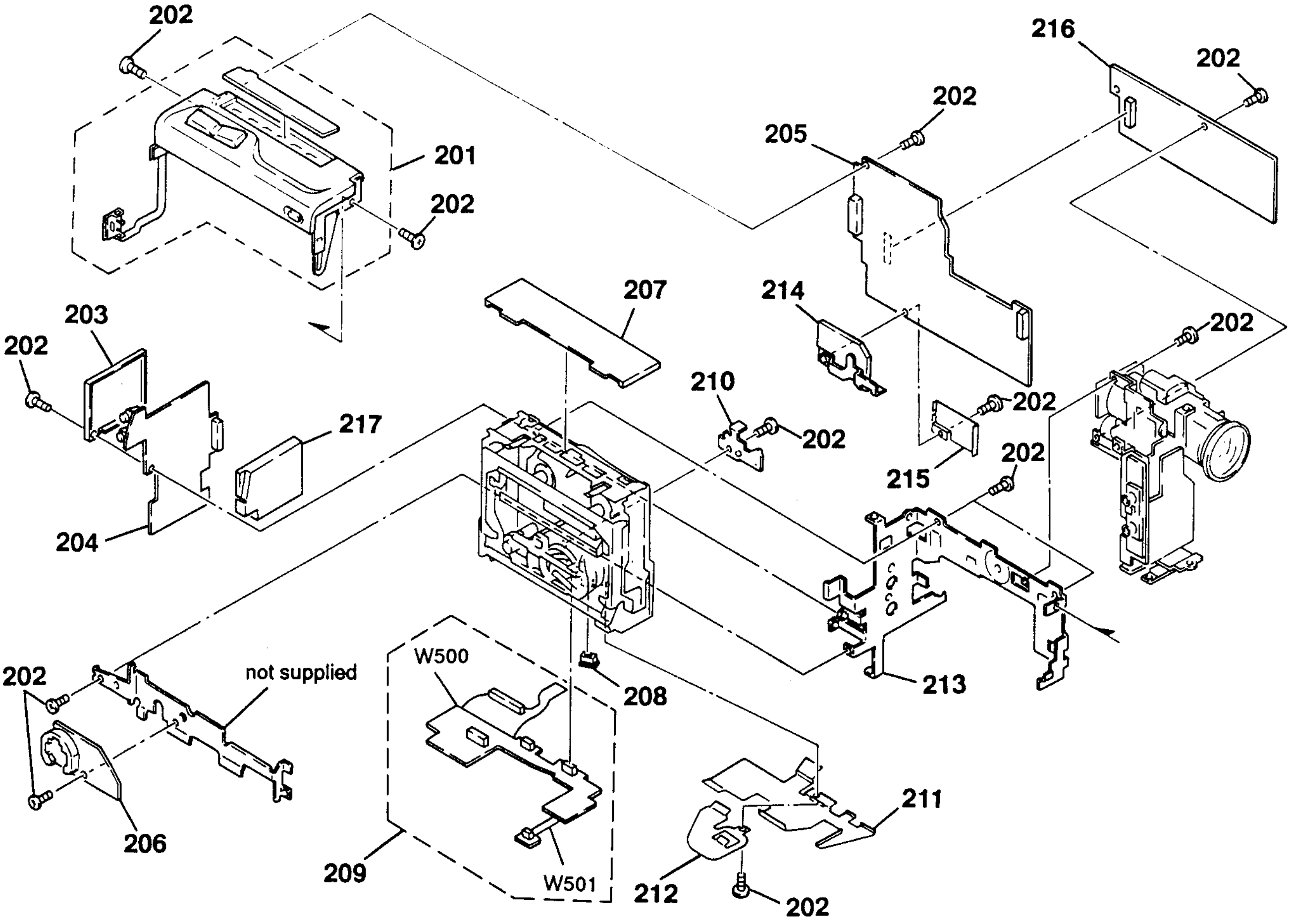
W901
not supplied
152
163
164
153
not supplied
153

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
151	X-3943-930-1	CABINET (L) ASSY, EVF	
152	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
153	3-948-339-01	SCREW, TAPPING	
154	3-958-627-11	LENS (1), VF	
155	A-7082-596-A	HOLDER (1) BLOCK ASSY, FINDER	
156	3-958-217-01	SCREW (M2)	
157	3-958-629-01	SPRING, LEAF	
158	3-958-628-01	HOLDER (1), LENS	
159	A-7082-595-A	HOLDER (2) BLOCK ASSY, FINDER	
160	3-958-597-01	EYE CUP	
161	3-958-592-01	CABINET (R), EVF	
⚠162	1-452-673-11	CRT ASSY (M01KXX90WB)	
163	1-651-894-11	FP-86 FLEXIBLE BOARD	
* 164	A-7066-045-B	VF-65P BOARD, COMPLETE	
⚠W901	1-540-019-42	SOCKET ASSY, CRT	

5-1-5. MAIN BOARDS ASSEMBLY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216
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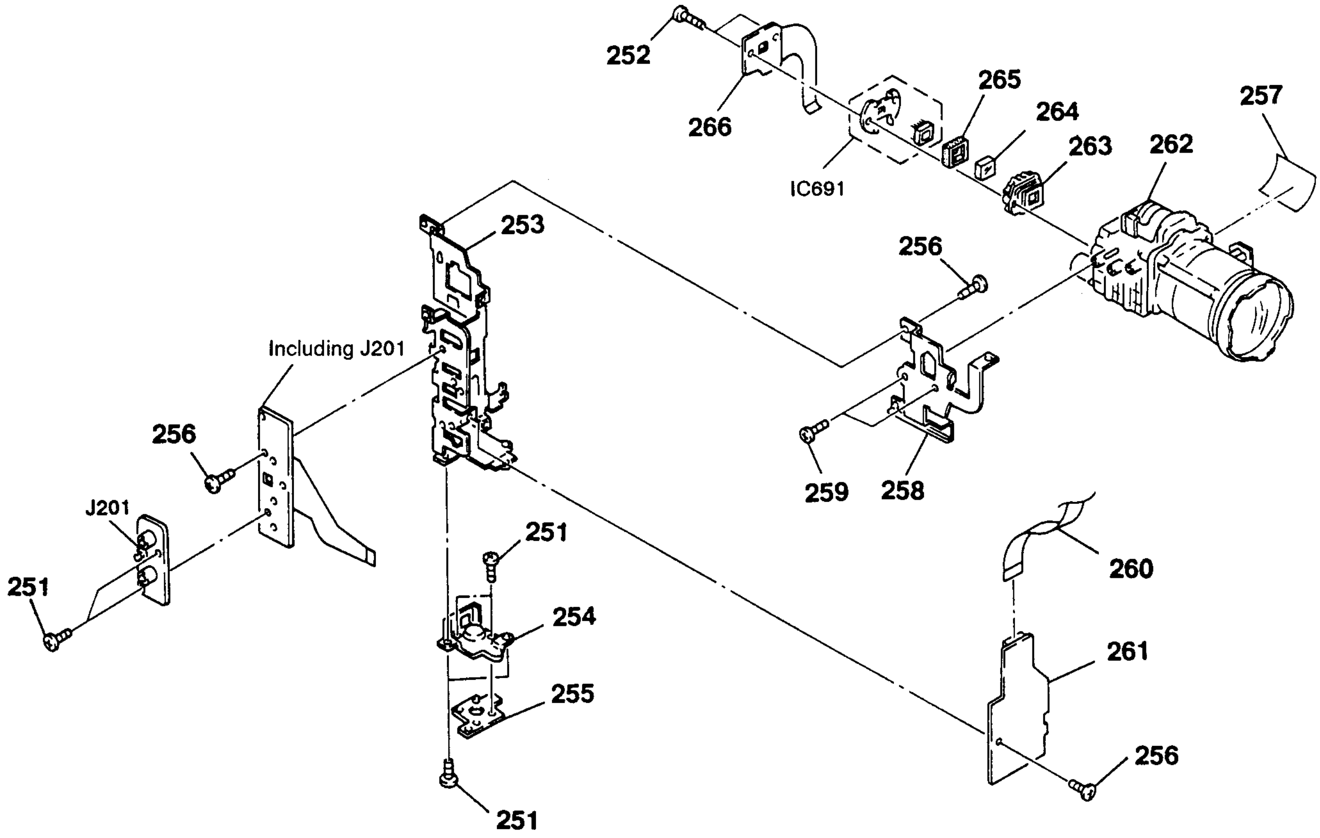
202
not supplied
W500
208
213
211
206
209
W501
212
202

Ref. No.	Part No.	Description	Remark
201	1-467-649-81	SWITCH BLOCK, CONTROL (FK)	
202	3-713-786-21	SCREW (M2X3)	
* 203	3-958-925-01	CASE (MAIN), SHIELD, DD	
* 204	A-7066-376-A	DD-77P (SL) BOARD, COMPLETE	
* 205	A-7066-377-A	VS-124P (SL) BOARD, COMPLETE	
* 206	A-7072-168-A	ZB-2(SL) BOARD, COMPLETE	
207	3-958-341-01	COVER, LS	
208	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 209	A-7072-167-A	SL-38(SL) BOARD, COMPLETE	
* 210	3-958-667-01	FRAME (B)	

Ref. No.	Part No.	Description	Remark
* 211	3-958-928-01	PLATE, SHIELD, RP	
212	1-651-891-11	FP-52 FLEXIBLE BOARD	
* 213	3-958-345-01	FRAME (U)	
* 214	X-3943-976-1	SHIELD (MAIN) ASSY, RP	
* 215	3-958-924-01	CASE (LID), SHIELD, RP	
* 216	A-7066-378-A	VC-160P (SL) BOARD, COMPLETE	
* 217	3-958-926-01	CASE (LID), SHIELD, DD	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

5-1-6. CCD BLOCK ASSEMBLY


252
266
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IC691
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Including J201
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J201
251
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258
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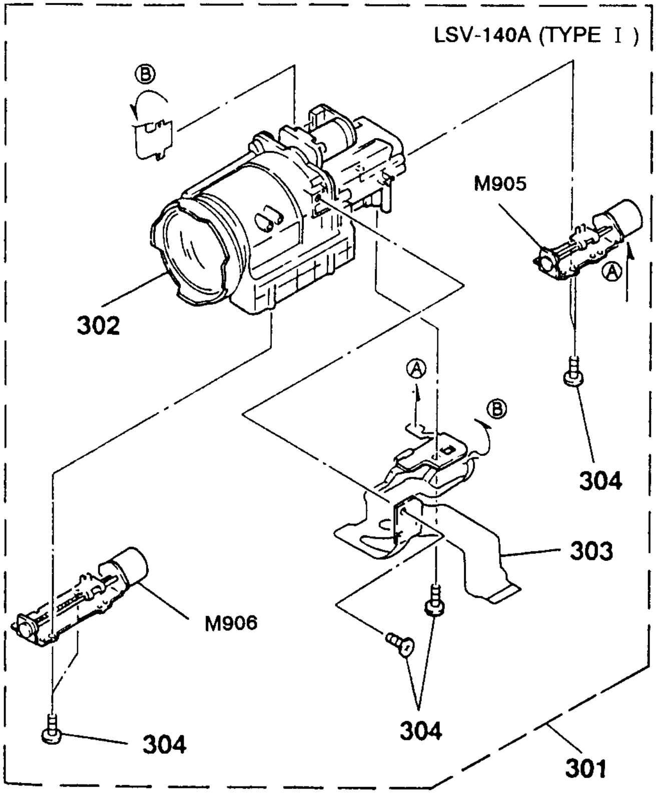
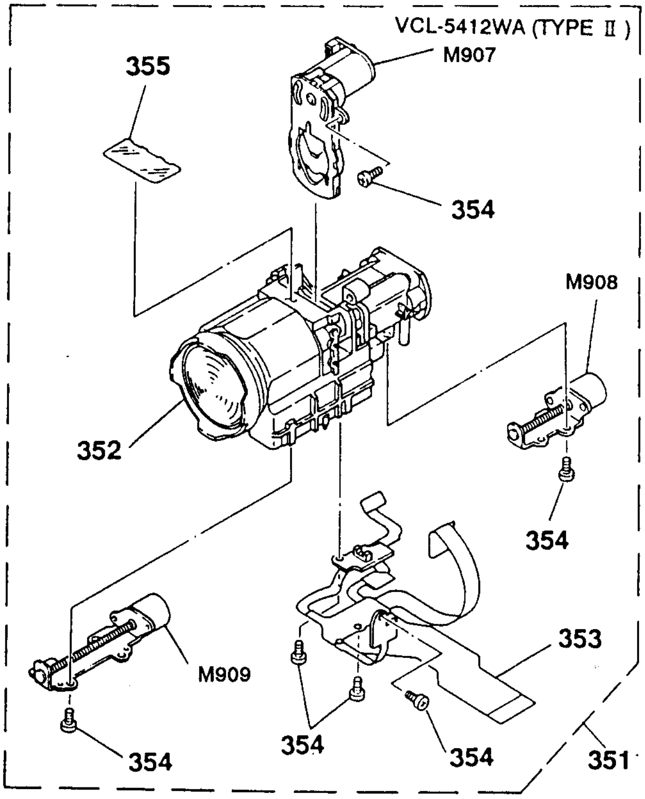
254
260
261
255
256
251

Be sure to read "Note on the CCD Imager replacement" on page 4-5 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
251	3-719-381-01	SCREW (M2X4)	
252	3-947-268-01	SCREW (P TIGHT)(2), TAPPING, +B	
* 253	3-958-587-01	FRAME (PJ)	
254	3-958-310-11	HOLDER, TRIPOD	
255	3-958-286-01	SHEET METAL, TRIPOD	
256	3-713-786-21	SCREW (M2X3)	
* 257	3-959-368-01	CUSHION, CABINET (R)	
* 258	3-958-666-01	FRAME (L)	
259	3-948-339-01	SCREW, TAPPING	
260	1-765-362-11	CABLE, FLAT (FFC-134)	
* 261	A-7066-375-A	AU-183P BOARD, COMPLETE	
262	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
262	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
262	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
263	3-946-856-01	ADAPTOR (H), CCD FITTING	
264	1-547-558-21	FILTER BLOCK, OPTICAL	
265	3-946-857-01	RUBBER (S), SEAL	
* 266	A-7072-135-A	CD-137 B BOARD, COMPLETE	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	
J201	1-537-731-11	TERMINAL BOARD	

5-1-7. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA) (VCL-5412WB)


LSV-140A (TYPE I)
Ⓑ
M905
Ⓐ
302
Ⓐ
Ⓑ
304
303
M906
304
304
301


VCL-5412WA (TYPE II)
355
M907
354
M908
352
354
353
M909
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354
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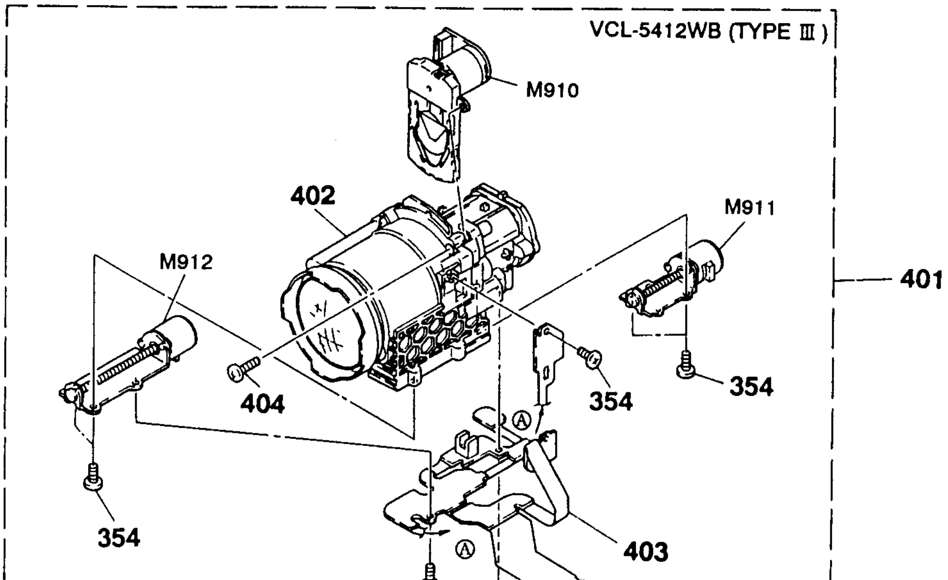
351


VCL-5412WB (TYPE III)
M910
402
M911
M912
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404
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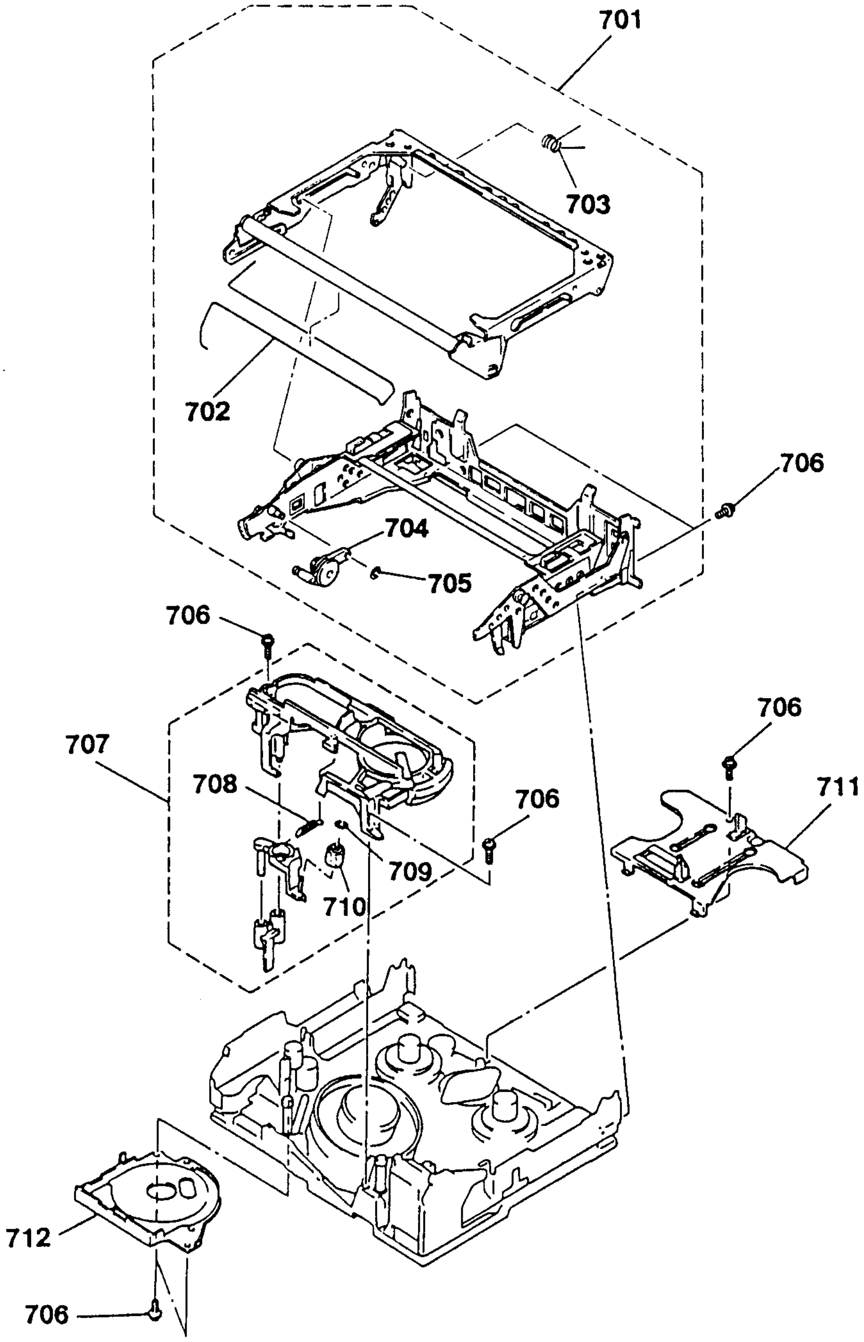
403
Ⓐ
354

Ref. No.	Part No.	Description	Remark
301	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
302	A-4910-598-A	DEVICE ASSY, LSV-140A (RP)	
303	A-4915-338-A	FLEXIBLE MOUNT	
304	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
351	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
352	3-708-891-01	TUBE, MIRROR ASSY	
353	3-708-890-01	FLEXIBLE, MAIN	
354	3-708-302-01	SCREW (BT3 P1.7X4C)	
355	3-708-886-01	COVER, IG	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
401	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
402	3-708-900-01	TUBE, MIRROR ASSY	
403	3-708-899-01	PC BOARD ASSY, FLEXIBLE	
404	3-708-617-01	SCREW (BT3 P1.7X7C)	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	

5-1-8. CASSETTE COMPARTMENT ASSEMBLY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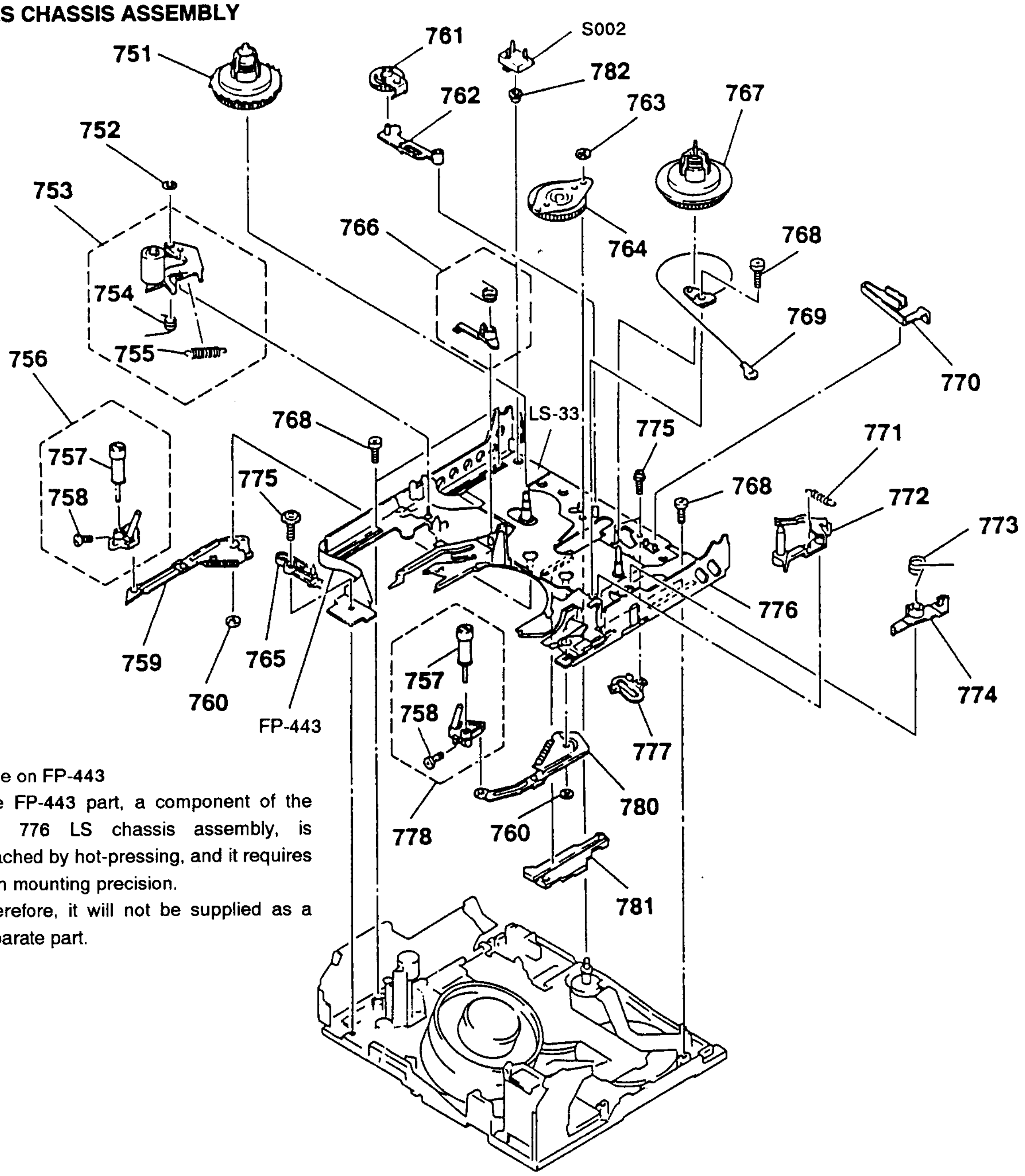
706

Ref. No.	Part No.	Description	Remark
701	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-945-773-01	BAR, TORSION	
703	3-945-771-01	SPRING, TORSION	
704	X-3941-287-2	DAMPER ASSY	
705	3-315-384-31	WASHER, STOPPER	
706	3-947-503-01	SCREW (M1.4X2.5)	
707	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
708	3-945-760-01	SPRING, TENSION	
709	3-321-393-01	WASHER, STOPPER	
710	X-3944-886-1	ROLLER ASSY, HC	
711	X-3941-280-1	RETAINER ASSY, GOOSENECK	
712	3-945-733-01	COVER, CAPSTAN	

5-1-9. LS CHASSIS ASSEMBLY


751
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S002
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LS-33
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FP-443
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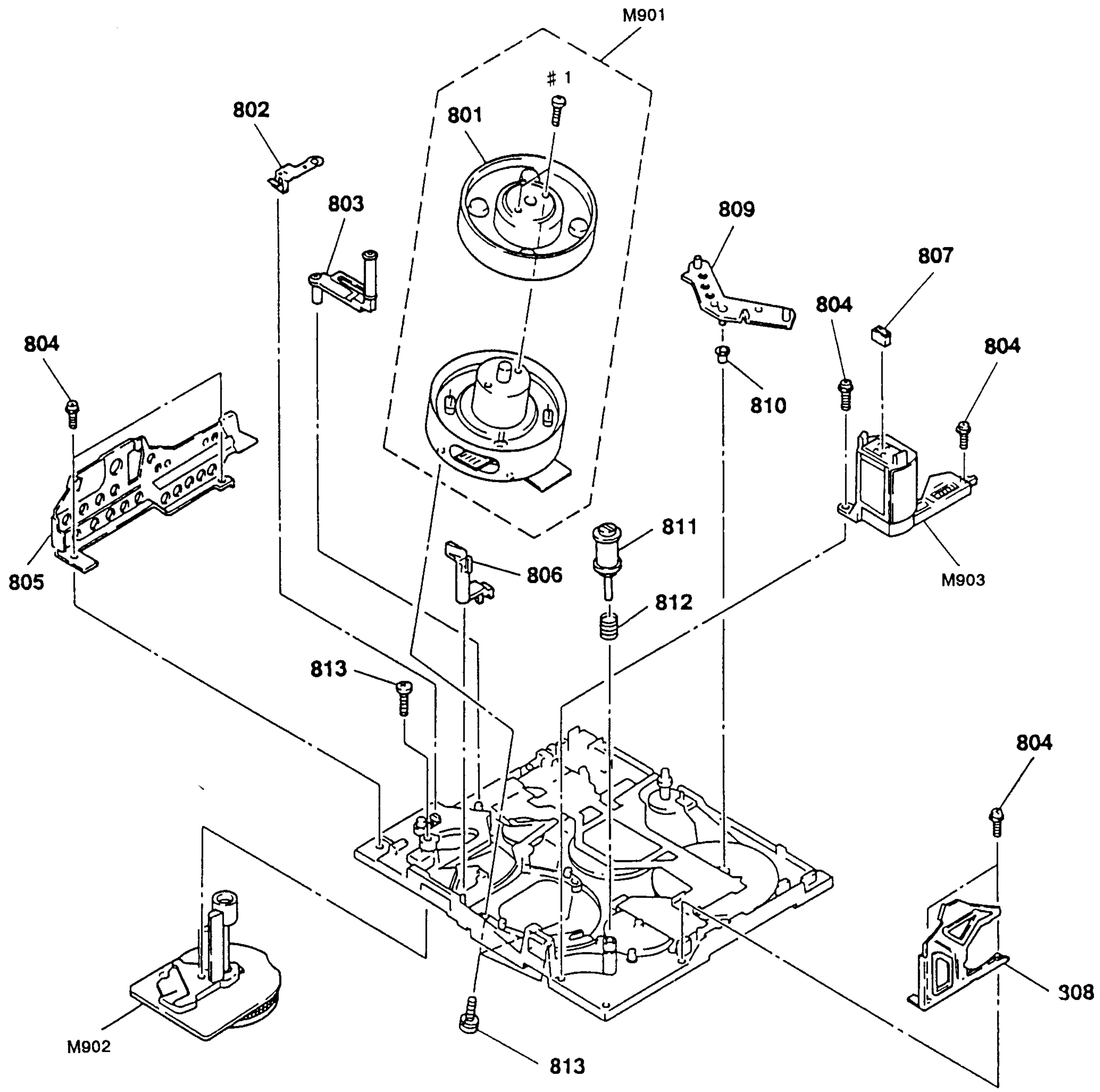
760
781

Note on FP-443
The FP-443 part, a component of the No. 776 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
751	X-3941-274-1	TABLE ASSY, REEL, T	
752	3-331-007-21	WASHER	
753	X-3941-271-5	ARM ASSY, PINCH	
754	3-945-743-01	SPRING, TORSION	
755	3-945-783-01	SPRING, TENSION	
756	A-7040-307-A	GUIDE (BASE)(T) BLOCK ASSY	
757	X-3941-424-1	ROLLER ASSY, TG6	
758	3-947-504-01	SCREW (M1.2X2)	
759	X-3941-267-1	ARM (T) ASSY, GUIDE	
760	3-669-465-01	WASHER (1.5), STOPPER	
761	X-3941-273-1	SOFT ASSY, T	
762	3-945-753-01	ARM, T SOFT	
763	3-726-829-01	WASHER, STOPPER	
764	X-3941-279-5	GEAR ASSY, GOOSENECK	
765	3-947-644-01	RETAINER, TG5 (BASE)	
766	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
767	X-3944-116-1	TABLE ASSY, S REEL	
768	3-945-756-01	SCREW (M1.4X3)	
769	X-3941-277-1	STRING BLOCK ASSY	
770	3-945-801-01	BRAKE, S SOFT	
771	3-954-327-01	SPRING, TENSION	
772	X-3941-276-1	TG1 ASSY	
773	3-945-752-01	SPRING, TORSION	
774	3-945-799-01	BRAKE, S HARD	
775	3-947-503-01	SCREW (M1.4X2.5)	
776	X-3943-307-1	CHASSIS ASSY, LS	
777	3-945-784-01	PLATE, CAM, LS	
778	A-7040-323-A	GUIDE (BASE)(S) BLOCK ASSY	
780	X-3941-266-1	ARM (S) ASSY, GUIDE	
781	3-945-837-01	SLIDER, GL	
782	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-1-10. MECHANISM CHASSIS ASSEMBLY (1)


M901
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M903
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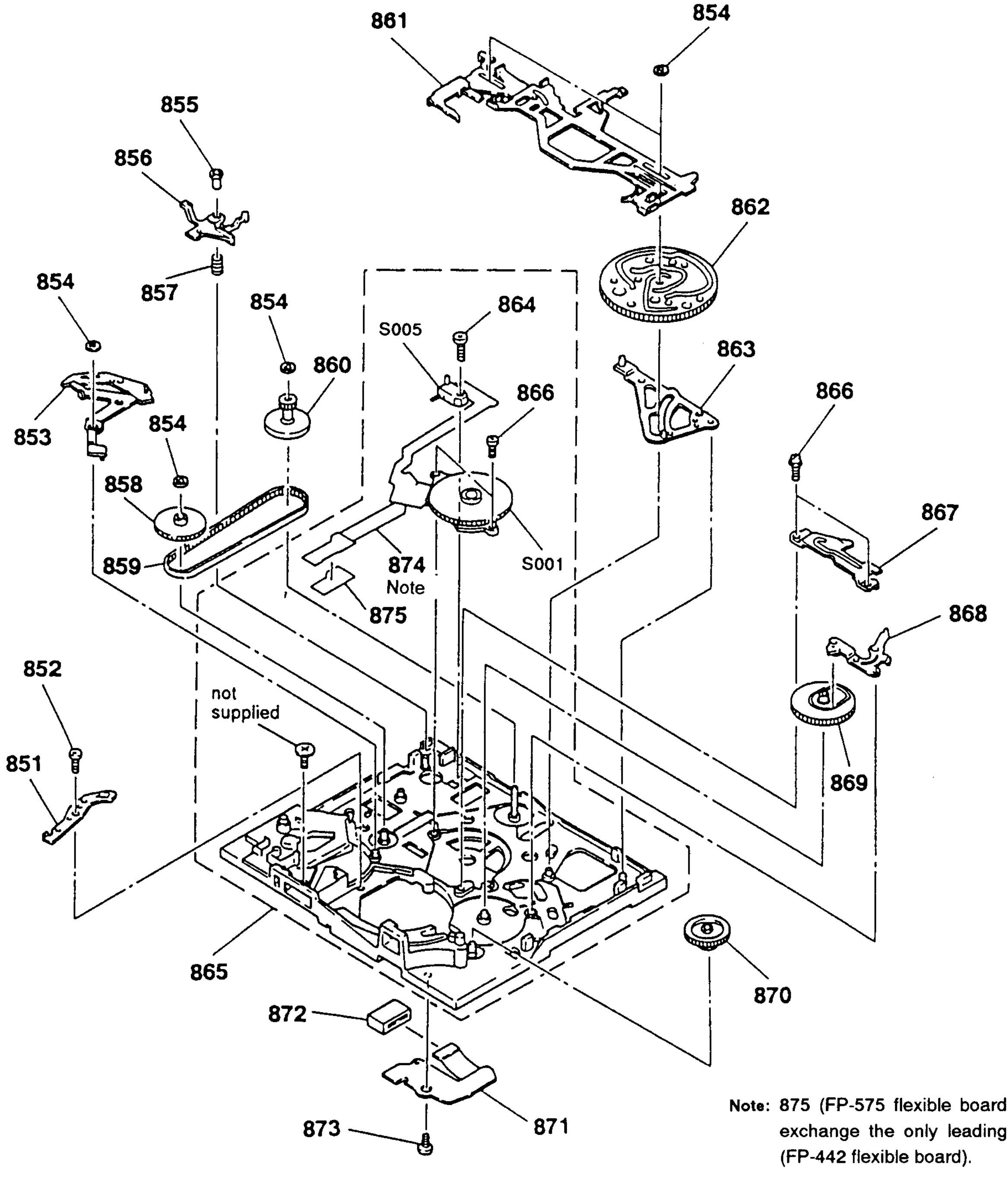
Ref. No.	Part No.	Description	Remark
801	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
802	3-945-822-01	SPRING, LEAF, TG7 ARM	
803	A-7040-305-A	ARM BLOCK ASSY, TG7	
804	3-947-503-01	SCREW (M1. 4X2. 5)	
805	X-3941-255-1	PLATE (T) ASSY, SIDE	
806	3-945-735-01	ARM, HC CONVERSION	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
808	3-945-691-01	PLATE (S), SIDE	
809	3-945-701-01	ARM, LS	
810	3-945-702-01	ROLLER, LS	
811	X-3921-193-1	ROLLER ASSY, TG2	
812	3-956-651-01	SPRING, COMPRESSION	
813	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-1-11. MECHANISM CHASSIS ASSEMBLY (2)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S005
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S001
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not supplied
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Note: 875 (FP-575 flexible board) is part that exchange the only leading part of 874 (FP-442 flexible board).

Ref. No.	Part No.	Description	Remark
851	3-945-734-01	ARM, HC DRIVING	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
853	X-3941-259-1	ARM ASSY, PINCH PRESS	
854	3-726-829-01	WASHER, STOPPER	
855	3-945-730-01	SLEEVE, EJECT	
856	3-945-706-01	LEVER, EJECT	
857	3-945-729-01	SPRING, COMPRESSION	
858	X-3941-256-1	GEAR ASSY, CHANGE	
859	3-944-539-01	BELT, RELAY	
860	3-945-695-01	PULLEY, RELAY	
861	X-3941-260-1	SLIDER ASSY, M	
862	3-945-696-02	CAM	
863	X-3941-258-3	ARM ASSY, GL	
864	3-713-786-71	SCREW (M2X5)	
865	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
866	3-947-503-01	SCREW (M1.4X2.5)	
867	3-945-722-01	RETAINER, GEAR	
868	X-3941-257-1	ARM ASSY, FF	
869	3-945-697-01	GEAR (B), L	
870	3-945-700-01	GEAR (A), L	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
873	3-945-756-01	SCREW (M1.4X3)	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

AU-183P

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Hong Kong model is abbreviated as HK.
  Australian model is abbreviated as AUS.
  Tourist model is abbreviated as JE.

Ref. No.	Part No.	Description	Remark
	A-7066-375-A	AU-183P BOARD, COMPLETE ************************	
		(Ref. No. 3,000 Series)	
		< CAPACITOR >	
C402	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C403	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C404	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C405	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
C407	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C408	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C409	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C411	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C412	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C413	1-126-209-11	ELECT 100uF 20% 4V	
C414	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C415	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C416	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C419	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C421	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C422	1-216-864-11	METAL CHIP 0 5% 1/16W	
C424	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C425	1-164-346-11	CERAMIC CHIP 1uF 16V	
C426	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C428	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C429	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C430	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C431	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C433	1-164-346-11	CERAMIC CHIP 1uF 16V	
C434	1-128-003-11	ELECT CHIP 22uF 20% 4V	
C435	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C436	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C437	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C438	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C439	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C440	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C441	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C442	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C443	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN401	1-691-516-11	CONNECTOR, BOARD TO BOARD 24P	
CN402	1-691-487-21	CONNECTOR, FFC/FPC 8P	
		< IC >	
IC401	8-759-823-19	IC CXA1488RR	
		< COIL >	
L401	1-412-954-11	INDUCTOR 18uH	
		< TRANSISTOR >	
Q404	8-729-402-81	TRANSISTOR XN4501	
		< RESISTOR >	
R401	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R403	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	
R404	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R406	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R407	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R411	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R412	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R415	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R416	1-216-864-11	METAL CHIP 0 5% 1/16W	
R418	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R420	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R423	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R424	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R425	1-216-810-11	METAL CHIP 120 5% 1/16W	
R429	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R430	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R431	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R432	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R433	1-216-817-11	METAL CHIP 470 5% 1/16W	
R434	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R435	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R436	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R442	1-216-817-11	METAL CHIP 470 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
	A-7072-135-A	CD-137 B BOARD, COMPLETE	
		************************	
		(Ref. No. 1,000 Series)	
		< CAPACITOR >	
C691	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C692	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C693	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C694	1-164-346-11	CERAMIC CHIP 1uF 16V	
C695	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C696	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	
		< IC >	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	
		< COIL >	
L691	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q691	8-729-232-86	TRANSISTOR 2SK1875-BL/V	
Q692	8-729-117-73	TRANSISTOR 2SC4178-F14	
		< RESISTOR >	
R692	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R693	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R694	1-216-045-00	METAL CHIP 680 5% 1/10W	
R695	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R696	1-216-809-11	METAL CHIP 100 5% 1/16W	
R697	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< FLEXIBLE BOARD >	
W691	1-654-849-11	FP-275 FLEXIBLE BOARD	
W692	1-654-849-11	FP-275 FLEXIBLE BOARD	
**			
	A-7066-376-A	DD-77P (SL) BOARD, COMPLETE	
		***************************	
		(Ref. No. 5,000 Series)	
		< CAPACITOR >	
C901	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C902	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C904	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C906	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C907	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C908	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C909	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C910	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	

Ref. No.	Part No.	Description	Remark
C911	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C912	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C913	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C914	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C915	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C917	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C918	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C920	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C921	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C923	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C924	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C925	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C926	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C927	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C928	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C929	1-135-216-11	TANTALUM CHIP 10uF 20% 10V	
C930	1-107-418-11	ELECT CHIP 10uF 20% 35V	
C931	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C932	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C934	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C936	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C938	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C939	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C940	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C941	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C942	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C943	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C944	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C945	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C946	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C950	1-128-004-11	ELECT CHIP 10uF 20% 16V	
		< CONNECTOR >	
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	
		< DIODE >	
D901	8-719-027-77	DIODE MA796-TX	
D909	8-719-404-49	DIODE MA111	
D910	8-719-404-49	DIODE MA111	
		< IC >	
IC901	8-759-295-31	IC MB3799-03PFV-G-BND-ER	
		< JACK >	
J901	1-537-281-11	TERMINAL BOARD (BATTERY TERMINAL)	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
J903	1-568-027-11	JACK, SMALL TYPE 1P (PHONES)	

Be sure to read "Note on the CCD Imager replacement" on page 4–5 when changing the CCD imager.

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-424-653-11	COIL, CHOKE 10uH	
L902	1-424-653-11	COIL, CHOKE 10uH	
L903	1-424-653-11	COIL, CHOKE 10uH	
L904	1-409-556-11	COIL, CHOKE 47uH	
L905	1-424-674-11	COIL, CHOKE 22uH	
L906	1-409-556-11	COIL, CHOKE 47uH	
L907	1-424-674-11	COIL, CHOKE 22uH	
L908	1-424-674-11	COIL, CHOKE 22uH	
L909	1-412-056-11	INDUCTOR CHIP 4.7uH	
L910	1-412-056-11	INDUCTOR CHIP 4.7uH	
L912	1-412-056-11	INDUCTOR CHIP 4.7uH	
L914	1-412-064-11	INDUCTOR CHIP 100uH	
L915	1-412-064-11	INDUCTOR CHIP 100uH	
L916	1-412-056-11	INDUCTOR CHIP 4.7uH	
L917	1-412-056-11	INDUCTOR CHIP 4.7uH	
L918	1-216-296-00	METAL CHIP 0 5% 1/8W	
L919	1-216-296-00	METAL CHIP 0 5% 1/8W	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS450	1-533-284-11	LINK, CHIP IC SOC1600 (1.6A)	
⚠PS451	1-533-284-11	LINK, CHIP IC SOC1600 (1.6A)	
⚠PS452	1-533-284-11	LINK, CHIP IC SOC1600 (1.6A)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q901	8-729-420-12	TRANSISTOR XN4213	
Q902	8-729-804-41	TRANSISTOR 2SB1122-S	
Q903	8-729-823-82	TRANSISTOR FP101	
Q904	8-729-823-84	TRANSISTOR FP102	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-823-82	TRANSISTOR FP101	
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q914	8-729-402-42	TRANSISTOR UN5213	
Q915	8-729-402-42	TRANSISTOR UN5213	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-218-872-11	METAL CHIP 11K 0.50% 1/16W	
R902	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R903	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R904	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R905	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R906	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R907	1-216-035-00	METAL CHIP 270 5% 1/10W	
R908	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R909	1-216-031-00	METAL CHIP 180 5% 1/10W	
R910	1-216-029-00	METAL CHIP 150 5% 1/10W	
R911	1-216-029-00	METAL CHIP 150 5% 1/10W	
R912	1-216-029-00	METAL CHIP 150 5% 1/10W	
R913	1-216-041-00	METAL CHIP 470 5% 1/10W	
R916	1-216-864-11	METAL CHIP 0 5% 1/16W	
R917	1-216-864-11	METAL CHIP 0 5% 1/16W	
R918	1-216-819-11	METAL CHIP 680 5% 1/16W	
R919	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R920	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R924	1-216-864-11	METAL CHIP 0 5% 1/16W	
R925	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R927	1-216-864-11	METAL CHIP 0 5% 1/16W	
R928	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R931	1-216-813-11	METAL CHIP 220 5% 1/16W	
R932	1-216-864-11	METAL CHIP 0 5% 1/16W	
R936	1-216-864-11	METAL CHIP 0 5% 1/16W	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
R938	1-216-864-11	METAL CHIP 0 5% 1/16W	
R940	1-216-864-11	METAL CHIP 0 5% 1/16W	
R941	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R944	1-216-864-11	METAL CHIP 0 5% 1/16W	
R945	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠T901	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	

****

LS-33 BOARD, COMPLETE
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(Ref. No. 6,000 Series)

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-989-52	DIODE GL4600S	

< HALL ELEMENT >

Ref. No.	Part No.	Description	Remark
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S002	1-572-987-11	SWITCH, PUSH (3 KEY)(TAPE SELECT)	

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
	A-7066-379-A	MA-231P BOARD, COMPLETE ************************	
		(Ref. No. 3,000 Series)	
		< CAPACITOR >	
C014	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C015	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C032	1-164-346-11	CERAMIC CHIP 1uF 16V	
C033	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C034	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C035	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C036	1-164-344-11	CERAMIC CHIP 0.068uF 10% 25V	
C037	1-164-346-11	CERAMIC CHIP 1uF 16V	
C040	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C041	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C044	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C045	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
		< CONNECTOR >	
CN001	1-691-487-21	CONNECTOR, FFC/FPC 8P	
* CN003	1-580-055-21	PIN, CONNECTOR 2P	
		< DIODE >	
D004	8-719-404-19	DIODE LN1251C	
		< IC >	
IC002	8-749-925-07	IC RS-30E-T	
IC003	8-759-822-37	IC LA7293M-TE-L	
		< JACK >	
J001	1-568-027-11	JACK, SMALL TYPE 1P (MIC, PLUG IN POWER)	
		< COIL >	
L002	1-216-295-91	CONDUCTOR, CHIP (2012)	
L003	1-216-295-91	CONDUCTOR, CHIP (2012)	
		< TRANSISTOR >	
Q002	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
		< RESISTOR >	
R028	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R029	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R030	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R031	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R032	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R033	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R043	1-216-815-11	METAL CHIP 330 5% 1/16W	
R044	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R045	1-216-834-11	METAL CHIP 12K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
**			
	A-7072-167-A	SL-38 (SL) BOARD, COMPLETE **************************	
		(Ref. No. 3,000 Series)	
		< CAPACITOR >	
C543	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C544	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C545	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C546	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C547	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C551	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C553	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C554	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C555	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C556	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C557	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C558	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
		< CONNECTOR >	
CN500	1-691-473-21	CONNECTOR, FFC/FPC 7P	
CN501	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN502	1-691-482-21	CONNECTOR, FFC/FPC 15P	
		< IC >	
IC507	8-759-165-47	IC MPC1780VFUEB	
		< COIL >	
L505	1-216-295-91	CONDUCTOR, CHIP (2012)	
		< TRANSISTOR >	
Q560	8-729-805-25	TRANSISTOR 2SB1121	
Q561	8-729-425-50	TRANSISTOR 2SB1462Q	
Q562	8-729-402-81	TRANSISTOR XN4501	
		< RESISTOR >	
R562	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R563	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R564	1-216-864-11	METAL CHIP 0 5% 1/16W	
R565	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R566	1-218-857-11	METAL CHIP 2.7K 0.50% 1/16W	
R567	1-216-295-91	CONDUCTOR, CHIP (2012)	
R568	1-216-168-00	METAL GLAZE 56 5% 1/8W	
R569	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R570	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R571	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R572	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R590	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R591	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

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A-7066-378-A VC-160P (SL) BOARD, COMPLETE

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(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C601	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C604	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C606	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C607	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C608	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C610	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C611	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C612	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C613	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C614	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C616	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C617	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C618	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C619	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C620	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C621	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C622	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C623	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C624	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C627	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C628	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C629	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C630	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C632	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C633	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C634	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C637	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C638	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C643	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C645	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C646	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C696	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C701	1-163-059-91	CERAMIC CHIP	0.01uF	10%	50V
C702	1-162-638-11	CERAMIC CHIP	1uF		16V
C703	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C704	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C705	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C706	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C708	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C709	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C710	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C715	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C718	1-162-637-11	CERAMIC CHIP	0.47uF		16V
C719	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C721	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C724	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C725	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C726	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C727	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C730	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C731	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C732	1-162-638-11	CERAMIC CHIP	1uF		16V
C733	1-162-638-11	CERAMIC CHIP	1uF		16V
C734	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C735	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C737	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C739	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C742	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C743	1-162-638-11	CERAMIC CHIP	1uF		16V
C745	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C746	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C747	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C748	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C750	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C751	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C752	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C753	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C754	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C755	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C756	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C757	1-162-974-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN601	1-764-395-21	CONNECTOR, BOARD TO BOARD 42P	
CN701	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN751	1-764-528-11	CONNECTOR, FFC/FPC (ZIF) 21P	

< TRIMMER >

Ref. No.	Part No.	Description	Remark
CT701	1-141-356-11	CAP, ADJ	

< DIODE >

Ref. No.	Part No.	Description	Remark
D701	8-719-404-49	DIODE MA111	
D702	8-719-404-49	DIODE MA111	

Ref. No.	Part No.	Description	Remark
D703	8-719-404-49	DIODE MA111	
D705	8-719-404-49	DIODE MA111	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL601	1-239-766-11	FILTER, LOW PASS	

< IC >

Ref. No.	Part No.	Description	Remark
IC601	8-759-261-21	IC S-29255AFE-TF	
IC602	8-759-337-57	IC SC424611-MC68HC11MA8FU	
IC603	8-759-064-36	IC MB88346BPFV	
IC604	8-759-710-29	IC NJM2235M	
IC609	8-752-369-23	IC CXD2150AR-T6	
IC610	8-752-365-72	IC CXD2151R-T6	
IC611	8-759-262-36	IC CXD2133BR-T6	
IC614	8-759-255-09	IC uPD6461GS-802-GLG-E2	
IC701	8-752-355-07	IC CXD1267N-T4	
IC702	8-752-365-74	IC CXD1266R-T4	
IC703	8-752-069-21	IC CXA1690Q-T4	
IC704	8-759-263-29	IC HD49315FEB	
IC705	8-752-373-69	IC CXD2407BR-T4	
IC751	8-759-701-24	IC NJM3414M	
IC752	8-759-058-50	IC BA10324AF-E2	
IC753	8-752-365-65	IC CXD2126N-T4	
IC754	8-759-247-07	IC MPC17A34VMEL	
IC755	8-759-031-58	IC SC7SU04F	

< COIL >

Ref. No.	Part No.	Description	Remark
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L604	1-414-078-11	INDUCTOR 10uH	
L605	1-410-389-31	INDUCTOR CHIP 47uH	
L608	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-058-11	INDUCTOR CHIP 10uH	
L751	1-412-062-11	INDUCTOR CHIP 47uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q604	8-729-010-60	TRANSISTOR MSA1586-BC	
Q605	8-729-010-60	TRANSISTOR MSA1586-BC	
Q606	8-729-010-75	TRANSISTOR MSC4116-BC	
Q607	8-729-010-75	TRANSISTOR MSC4116-BC	
Q701	8-729-403-27	TRANSISTOR XN4401	
Q751	8-729-010-75	TRANSISTOR MSC4116-BC	
Q752	8-729-015-76	TRANSISTOR UN5211-TX	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R601	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R602	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R603	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R604	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R606	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R607	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R608	1-216-864-11	METAL CHIP 0 5% 1/16W	
R609	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R610	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R611	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R612	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R613	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R617	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R619	1-216-803-11	METAL CHIP 33 5% 1/16W	
R620	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R621	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R623	1-216-863-11	METAL GLAZE 3.3M 5% 1/16W	
R624	1-216-864-11	METAL CHIP 0 5% 1/16W	
R625	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R626	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R627	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R628	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R629	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R630	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R631	1-216-864-11	METAL CHIP 0 5% 1/16W	
R634	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R635	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R636	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R637	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R638	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R640	1-216-815-11	METAL CHIP 330 5% 1/16W	
R642	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R643	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R645	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R646	1-216-818-11	METAL CHIP 560 5% 1/16W	
R647	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R648	1-216-818-11	METAL CHIP 560 5% 1/16W	
R649	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R650	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R651	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R652	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R654	1-216-864-11	METAL CHIP 0 5% 1/16W	
R656	1-216-864-11	METAL CHIP 0 5% 1/16W	
R658	1-216-864-11	METAL CHIP 0 5% 1/16W	
R659	1-216-817-11	METAL CHIP 470 5% 1/16W	
R661	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R662	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R663	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R664	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R665	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R666	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R667	1-216-820-11	METAL CHIP 820 5% 1/16W	
R668	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R669	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R670	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R671	1-216-296-00	METAL CHIP	0	5%	1/8W	
R672	1-216-296-00	METAL CHIP	0	5%	1/8W	
R701	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R702	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R703	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R704	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R705	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R708	1-216-864-11	METAL CHIP	0	5%	1/16W	
R709	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R710	1-216-864-11	METAL CHIP	0	5%	1/16W	
R712	1-216-864-11	METAL CHIP	0	5%	1/16W	
R713	1-216-807-11	METAL CHIP	68	5%	1/16W	
R714	1-216-864-11	METAL CHIP	0	5%	1/16W	
R716	1-218-847-11	METAL CHIP	1K	0.50%	1/16W	
R718	1-216-807-11	METAL CHIP	68	5%	1/16W	
R719	1-218-876-11	METAL CHIP	16K	0.50%	1/16W	
R720	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R721	1-216-864-11	METAL CHIP	0	5%	1/16W	
R722	1-216-864-11	METAL CHIP	0	5%	1/16W	
R724	1-216-864-11	METAL CHIP	0	5%	1/16W	
R725	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R728	1-216-864-11	METAL CHIP	0	5%	1/16W	
R729	1-216-864-11	METAL CHIP	0	5%	1/16W	
R730	1-216-296-00	METAL CHIP	0	5%	1/8W	
R741	1-218-855-11	METAL CHIP	2.2K	0.50%	1/16W	
R742	1-218-865-11	METAL CHIP	5.6K	0.50%	1/16W	
R743	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R744	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R745	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R746	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R747	1-216-820-11	METAL CHIP	820	5%	1/16W	
R748	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R749	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R750	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R751	1-216-809-11	METAL CHIP	100	5%	1/16W	
R752	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R753	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R754	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R755	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R756	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R757	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R758	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R759	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R760	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R761	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R762	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R764	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R799	1-216-296-00	METAL CHIP	0	5%	1/8W	

< VIBRATOR >

Ref.No.	Part No.	Description	Remark
X601	1-760-081-21	VIBRATOR, CERAMIC (24MHz)	
X701	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	

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A-7066-045-B VF-65P BOARD, COMPLETE
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(Ref. No. 4,000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description				Remark
C901	1-124-635-00	ELECT	220uF	20%	6.3V	
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C903	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	
C904	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
C905	1-104-753-11	TANTAL. CHIP	47uF	20%	6.3V	
C906	1-162-638-11	CERAMIC CHIP	1uF		16V	
C907	1-137-306-11	FILM CHIP	0.1uF	5%	16V	
C908	1-163-237-11	CERAMIC CHIP	27PF	5%	50V	
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V	
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V	
C912	1-127-532-11	ELECT(SOLID)	47uF	20%	6.3V	
C913	1-124-577-11	ELECT	82uF	20%	10V	
C914	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V	
C917	1-165-319-11	CERAMIC CHIP	0.1uF		50V	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN901	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN902	1-573-290-21	PIN, CONNECTOR (1.5MM) (SMD)4P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D901	8-719-404-19	DIODE LN1251C	
D903	8-719-400-20	DIODE MA152WA	

< IC >

Ref.No.	Part No.	Description	Remark
IC901	8-759-196-14	IC BA7149F-E2	

< COIL >

Ref.No.	Part No.	Description	Remark
⚠L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
⚠L903	1-402-680-21	COIL, FERRITE (HCL)	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q903	8-729-216-31	TRANSISTOR 2SA1163-G	
Q904	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

< RESISTOR >

Ref.No.	Part No.	Description				Remark
R901	1-216-041-00	METAL CHIP	470	5%	1/10W	
R902	1-216-041-00	METAL CHIP	470	5%	1/10W	
R903	1-216-035-00	METAL CHIP	270	5%	1/10W	
R906	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R907	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R908	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R909	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R910	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R911	1-216-160-00	METAL GLAZE	27	5%	1/8W	
R912	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R913	1-216-047-00	METAL CHIP	820	5%	1/10W	
R914	1-216-033-00	METAL CHIP	220	5%	1/10W	
R915	1-216-308-00	METAL CHIP	4.7	5%	1/10W	
R916	1-208-814-11	METAL CHIP	22K	0.50%	1/10W	
R917	1-218-754-11	METAL CHIP	120K	0.50%	1/10W	
R918	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R919	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R920	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R921	1-216-311-00	METAL CHIP	6.8	5%	1/10W	
R922	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R923	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R924	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R925	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R926	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R927	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R928	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R929	1-216-043-91	METAL GLAZE	560	5%	1/10W	

< VARIABLE RESISTOR >

Ref.No.	Part No.	Description	Remark
RV903	1-238-086-11	RES, ADJ, CERMET 470	
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M	

< TRANSFORMER >

Ref.No.	Part No.	Description	Remark
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	

< THERMISTOR >

Ref.No.	Part No.	Description	Remark
TH901	1-809-350-21	THERMISTOR, NTC (2125)	

< SOCKET >

Ref.No.	Part No.	Description	Remark
⚠W901	1-540-019-42	SOCKET ASSY, CRT	

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A-7066-377-A VS-124P (SL) BOARD, COMPLETE
****
(Ref. No. 10,000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description				Remark
C101	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C102	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	
C106	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C107	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C108	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C109	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C110	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C111	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C112	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C113	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C114	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C115	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C116	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C117	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C118	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C119	1-162-961-11	CERAMIC CHIP	330PF	10%	50V	
C120	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C121	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C122	1-162-961-11	CERAMIC CHIP	330PF	10%	50V	
C123	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C124	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C128	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C131	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C134	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C135	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C136	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C137	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C143	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C145	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C146	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C147	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C148	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C149	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C150	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C151	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C152	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C154	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C156	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V	
C157	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	
C158	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C159	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	
C160	1-162-946-11	CERAMIC CHIP	27PF	5%	50V	
C161	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C163	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	

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Replace only with part number specified.

Ref.No.	Part No.	Description			Remark
C164	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C165	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C166	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C167	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C168	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C169	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C172	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C190	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C204	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C205	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C206	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C207	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C208	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C209	1-126-246-11	ELECT CHIP	220uF	20%	4V
C210	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C211	1-128-013-11	ELECT CHIP	1uF	20%	50V
C212	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C213	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C215	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C216	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C217	1-128-013-11	ELECT CHIP	1uF	20%	50V
C218	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C219	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C220	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C222	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C229	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C230	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C231	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C232	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C234	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C235	1-126-207-11	ELECT CHIP	33uF	20%	4V
C238	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C239	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C240	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C241	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C242	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C243	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C244	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C245	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C246	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C247	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C251	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C258	1-164-346-11	CERAMIC CHIP	1uF		16V
C262	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C264	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C271	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C274	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C275	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C276	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C278	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C279	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C281	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C282	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C283	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C284	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C285	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C286	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C287	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C288	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C299	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C301	1-128-004-11	ELECT CHIP	10uF	20%	16V
C304	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C305	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C306	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C307	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C310	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C311	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C312	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C319	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C320	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C328	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C331	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C500	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C502	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C503	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C504	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C506	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C507	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C508	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C509	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C510	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C511	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C513	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C514	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C516	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C518	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C519	1-164-346-11	CERAMIC CHIP	1uF		16V

Ref. No.	Part No.	Description				Remark
C521	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C522	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C523	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C524	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C525	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C526	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C527	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C528	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C529	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C534	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C535	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C536	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C537	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C539	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C540	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C541	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C543	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C544	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C545	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C546	1-164-346-11	CERAMIC CHIP	1uF		16V	
C547	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C548	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C550	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C559	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C560	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C561	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C562	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C563	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C564	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C565	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C566	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C567	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C568	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C569	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C570	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C571	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C573	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	
C951	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C955	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C967	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C1506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C1508	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1509	1-164-383-11	CERAMIC CHIP	110PF	5%	50V	
C1510	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C1511	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C1512	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	

Ref. No.	Part No.	Description				Remark
C1513	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C1514	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C1515	1-164-145-11	CERAMIC CHIP	390PF	5%	50V	
C1516	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1521	1-162-961-11	CERAMIC CHIP	330PF	10%	50V	
		< CONNECTOR >				
CN101	1-691-492-21	CONNECTOR, FFC/FPC 13P				
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P				
CN201	1-766-343-21	CONNECTOR, FFC/FPC 13P				
CN202	1-691-536-11	CONNECTOR, BOARD TO BOARD 24P				
* CN203	1-764-396-21	CONNECTOR, BOARD TO BOARD 42P				
CN206	1-766-344-21	CONNECTOR, FFC/FPC 14P				
CN502	1-764-708-11	CONNECTOR, FFC/FPC (LIF) 9P				
CN503	1-764-717-11	CONNECTOR, FFC/FPC (LIF) 18P				
CN504	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P				
* CN505	1-764-397-21	CONNECTOR, BOARD TO BOARD 42P				
		< DIODE >				
D101	8-719-800-76	DIODE	1SS226			
D102	8-719-404-49	DIODE	MA111			
D201	8-719-027-50	DIODE	MA142WK-(TX)			
D204	8-719-027-50	DIODE	MA142WK-(TX)			
D212	8-719-404-49	DIODE	MA111			
D214	8-719-027-50	DIODE	MA142WK-(TX)			
D218	8-719-800-76	DIODE	1SS226			
D321	8-719-045-87	DIODE	MA4Z082WA-TX			
⚠D501	8-719-421-27	DIODE	MA728			
D504	8-719-404-49	DIODE	MA111			
D505	8-719-404-49	DIODE	MA111			
		< FILTER >				
FL201	1-236-848-21	FILTER, LOW PASS				
FL202	1-239-055-21	FILTER, LOW PASS (CCD.PAL.Y)				
		< IC >				
IC102	8-752-069-78	IC	CXA1704R-T4			
IC201	8-752-071-22	IC	CXA1700R-T6			
IC203	8-752-351-95	IC	CXL1506N-T4			
IC205	8-752-053-21	IC	CXA1211M			
IC206	8-759-261-32	IC	M52358VP-610D			
IC501	8-759-278-57	IC	AK6420HF-E2			
⚠IC502	8-759-295-62	IC	S-8423DFS-T2			
IC503	8-759-267-67	IC	MB89098PFV-G-107-BND			
IC505	8-752-851-37	IC	CXP87132-009R			
IC506	8-759-169-11	IC	CXA1575M-E2			
IC508	8-759-195-09	IC	XR1083CQ-E2			
IC951	8-759-169-02	IC	MB88344BPFV-G-BND-ER			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< COIL >	
L103	1-412-066-21	INDUCTOR CHIP 220uH	
L103	1-414-275-11	INDUCTOR 220uH	
L104	1-412-951-11	INDUCTOR 10uH	
L105	1-412-066-21	INDUCTOR CHIP 220uH	
L105	1-414-275-11	INDUCTOR 220uH	
L108	1-412-060-11	INDUCTOR CHIP 22uH	
L108	1-414-269-21	INDUCTOR 22uH	
L109	1-412-957-11	INDUCTOR 33uH	
L110	1-410-657-21	INDUCTOR CHIP 180uH	
L111	1-412-950-11	INDUCTOR 8.2uH	
L112	1-412-280-31	INDUCTOR 330uH	
L113	1-412-957-11	INDUCTOR 33uH	
L114	1-412-282-41	INDUCTOR 470uH	
L114	1-412-808-21	INDUCTOR 470uH	
L115	1-412-280-31	INDUCTOR 330uH	
L116	1-410-657-21	INDUCTOR CHIP 180uH	
L118	1-410-655-31	INDUCTOR CHIP 120uH	
L120	1-412-951-11	INDUCTOR 10uH	
L204	1-412-963-11	INDUCTOR 100uH	
L207	1-412-945-11	INDUCTOR 3.3uH	
L209	1-412-960-21	INDUCTOR 56uH	
L212	1-412-947-11	INDUCTOR 4.7uH	
L213	1-412-953-11	INDUCTOR 15uH	
L214	1-412-960-21	INDUCTOR 56uH	
L503	1-412-961-11	INDUCTOR 68uH	
		< IC LINK >	
⚠PS500	1-576-122-21	LINK, IC CCP2E10 0.4A	
⚠PS501	1-576-122-21	LINK, IC CCP2E10 0.4A	
		< TRANSISTOR >	
Q101	8-729-905-23	TRANSISTOR 2SA1576-R	
Q102	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q103	8-729-216-22	TRANSISTOR 2SA1162	
Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q105	8-729-402-42	TRANSISTOR UN5213	
Q106	8-729-402-42	TRANSISTOR UN5213	
Q109	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q111	8-729-015-74	TRANSISTOR UN5111-TX	
Q112	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q113	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q114	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q115	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q117	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q119	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q126	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q127	8-729-402-42	TRANSISTOR UN5213	
Q129	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q131	8-729-015-74	TRANSISTOR UN5111-TX	

Ref. No.	Part No.	Description	Remark
Q132	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q133	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q134	8-729-402-48	TRANSISTOR UN521E-TX	
Q135	8-729-402-48	TRANSISTOR UN521E-TX	
Q202	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q204	8-729-402-42	TRANSISTOR UN5213	
Q211	8-729-420-20	TRANSISTOR XN4312	
Q216	8-729-402-42	TRANSISTOR UN5213	
Q217	8-729-420-12	TRANSISTOR XN4213	
Q219	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q225	8-729-015-76	TRANSISTOR UN5211-TX	
Q232	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q234	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q235	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q236	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q237	8-729-402-81	TRANSISTOR XN4501	
Q238	8-729-420-50	TRANSISTOR UN5215	
Q240	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q241	8-729-420-50	TRANSISTOR UN5215	
Q242	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q244	8-729-402-42	TRANSISTOR UN5213	
Q246	8-729-402-81	TRANSISTOR XN4501	
Q247	8-729-402-42	TRANSISTOR UN5213	
Q248	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q249	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q252	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q253	8-729-420-56	TRANSISTOR UN511E	
Q254	8-729-403-35	TRANSISTOR UN5113	
Q255	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q256	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q257	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q258	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q259	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q260	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q261	8-729-402-42	TRANSISTOR UN5213	
Q262	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q263	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q264	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q266	8-729-402-42	TRANSISTOR UN5213	
Q267	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q268	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q501	8-729-403-27	TRANSISTOR XN4401	
Q503	8-729-402-81	TRANSISTOR XN4501	
Q504	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q506	8-729-402-42	TRANSISTOR UN5213	
Q507	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q511	8-729-420-20	TRANSISTOR XN4312	
Q951	8-729-101-07	TRANSISTOR 2SB798-DL	
Q952	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q954	8-729-230-63	TRANSISTOR 2SC4116-YG	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
Q956	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q958	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q1506	8-729-402-42	TRANSISTOR	UN5213			
Q1507	8-729-403-35	TRANSISTOR	UN5113			
		< RESISTOR >				
R101	1-216-864-11	METAL CHIP	0	5%	1/16W	
R102	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R103	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R104	1-216-819-11	METAL CHIP	680	5%	1/16W	
R105	1-216-819-11	METAL CHIP	680	5%	1/16W	
R106	1-216-814-11	METAL CHIP	270	5%	1/16W	
R107	1-216-813-11	METAL CHIP	220	5%	1/16W	
R108	1-216-800-11	METAL GLAZE	18	5%	1/16W	
R109	1-216-805-11	METAL CHIP	47	5%	1/16W	
R110	1-216-818-11	METAL CHIP	560	5%	1/16W	
R111	1-218-875-11	METAL CHIP	15K	0.50%	1/16W	
R112	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R114	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R117	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R118	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R119	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R120	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R122	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R123	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R124	1-216-864-11	METAL CHIP	0	5%	1/16W	
R126	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R127	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R128	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R129	1-809-357-21	THERMISTOR, NTC (2125)				
R130	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R131	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R132	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R133	1-216-819-11	METAL CHIP	680	5%	1/16W	
R134	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R135	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R136	1-216-820-11	METAL CHIP	820	5%	1/16W	
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R140	1-216-813-11	METAL CHIP	220	5%	1/16W	
R141	1-216-817-11	METAL CHIP	470	5%	1/16W	
R142	1-216-818-11	METAL CHIP	560	5%	1/16W	
R143	1-216-808-11	METAL CHIP	82	5%	1/16W	
R144	1-216-818-11	METAL CHIP	560	5%	1/16W	
R146	1-216-809-11	METAL CHIP	100	5%	1/16W	
R147	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R148	1-216-813-11	METAL CHIP	220	5%	1/16W	
R149	1-216-813-11	METAL CHIP	220	5%	1/16W	
R150	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R151	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R152	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R153	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R154	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R158	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R159	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R160	1-216-818-11	METAL CHIP	560	5%	1/16W	
R162	1-216-818-11	METAL CHIP	560	5%	1/16W	
R163	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R164	1-216-804-11	METAL CHIP	39	5%	1/16W	
R165	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R166	1-216-816-11	METAL CHIP	390	5%	1/16W	
R171	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R173	1-216-864-11	METAL CHIP	0	5%	1/16W	
R174	1-216-864-11	METAL CHIP	0	5%	1/16W	
R175	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R178	1-216-809-11	METAL CHIP	100	5%	1/16W	
R179	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R180	1-216-809-11	METAL CHIP	100	5%	1/16W	
R181	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R185	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R186	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R187	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R188	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R189	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R193	1-216-815-11	METAL CHIP	330	5%	1/16W	
R194	1-216-818-11	METAL CHIP	560	5%	1/16W	
R195	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R196	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R197	1-216-864-11	METAL CHIP	0	5%	1/16W	
R201	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R202	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R203	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R204	1-216-864-11	METAL CHIP	0	5%	1/16W	
R205	1-216-864-11	METAL CHIP	0	5%	1/16W	
R207	1-216-804-11	METAL CHIP	39	5%	1/16W	
R209	1-216-814-11	METAL CHIP	270	5%	1/16W	
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R211	1-216-803-11	METAL CHIP	33	5%	1/16W	
R212	1-216-864-11	METAL CHIP	0	5%	1/16W	
R213	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R214	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R215	1-216-819-11	METAL CHIP	680	5%	1/16W	
R216	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R218	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R219	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R221	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R223	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R224	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R226	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R228	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R230	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R231	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R232	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R233	1-216-809-11	METAL CHIP	100	5%	1/16W	
R234	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R235	1-218-877-11	METAL CHIP	18K	0.50%	1/16W	
R236	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R241	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R245	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R246	1-216-819-11	METAL CHIP	680	5%	1/16W	
R247	1-216-815-11	METAL CHIP	330	5%	1/16W	
R253	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R255	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R256	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W	
R261	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R263	1-218-839-11	METAL GLAZE	470	0.50%	1/16W	
R265	1-216-818-11	METAL CHIP	560	5%	1/16W	
R272	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R273	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R274	1-216-864-11	METAL CHIP	0	5%	1/16W	
R279	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R283	1-216-864-11	METAL CHIP	0	5%	1/16W	
R284	1-216-295-91	CONDUCTOR, CHIP (2012)				
R285	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R286	1-216-815-11	METAL CHIP	330	5%	1/16W	
R288	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R289	1-216-810-11	METAL CHIP	120	5%	1/16W	
R291	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R292	1-216-864-11	METAL CHIP	0	5%	1/16W	
R296	1-216-815-11	METAL CHIP	330	5%	1/16W	
R297	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R300	1-216-817-11	METAL CHIP	470	5%	1/16W	
R302	1-216-864-11	METAL CHIP	0	5%	1/16W	
R303	1-216-812-11	METAL CHIP	180	5%	1/16W	
R304	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R305	1-216-820-11	METAL CHIP	820	5%	1/16W	
R307	1-216-813-11	METAL CHIP	220	5%	1/16W	
R308	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R309	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R311	1-216-864-11	METAL CHIP	0	5%	1/16W	
R312	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R313	1-216-817-11	METAL CHIP	470	5%	1/16W	
R315	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R316	1-216-815-11	METAL CHIP	330	5%	1/16W	
R317	1-216-820-11	METAL CHIP	820	5%	1/16W	
R318	1-216-820-11	METAL CHIP	820	5%	1/16W	
R319	1-216-818-11	METAL CHIP	560	5%	1/16W	
R321	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R322	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R324	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R325	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R328	1-216-820-11	METAL CHIP	820	5%	1/16W	
R331	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R332	1-216-864-11	METAL CHIP	0	5%	1/16W	
R333	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R334	1-216-815-11	METAL CHIP	330	5%	1/16W	
R338	1-216-813-11	METAL CHIP	220	5%	1/16W	
R339	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R342	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R347	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R348	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R349	1-216-864-11	METAL CHIP	0	5%	1/16W	
R354	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R355	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R356	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R357	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R358	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R359	1-216-817-11	METAL CHIP	470	5%	1/16W	
R360	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R362	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R363	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R366	1-216-864-11	METAL CHIP	0	5%	1/16W	
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R373	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R380	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R381	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R383	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R395	1-216-864-11	METAL CHIP	0	5%	1/16W	
R398	1-216-820-11	METAL CHIP	820	5%	1/16W	
R399	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R501	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R502	1-216-295-91	CONDUCTOR, CHIP (2012)				
R503	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R505	1-216-864-11	METAL CHIP	0	5%	1/16W	
R506	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R507	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R508	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R509	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R510	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R511	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R512	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R513	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R514	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R515	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R516	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R517	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R518	1-216-857-11	METAL CHIP	1M	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R519	1-216-817-11	METAL CHIP	470	5%	1/16W	
R520	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R522	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R523	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R525	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R526	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R527	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R528	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R529	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R530	1-216-019-00	METAL CHIP	56	5%	1/10W	
R531	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R532	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R533	1-217-671-11	METAL CHIP	1	5%	1/10W	
R534	1-217-671-11	METAL CHIP	1	5%	1/10W	
R535	1-217-671-11	METAL CHIP	1	5%	1/10W	
R536	1-217-671-11	METAL CHIP	1	5%	1/10W	
R537	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R538	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R539	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R540	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R541	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R542	1-216-864-11	METAL CHIP	0	5%	1/16W	
R543	1-216-864-11	METAL CHIP	0	5%	1/16W	
R544	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R546	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R548	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R549	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R552	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R553	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R555	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R556	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R558	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R560	1-216-296-00	METAL CHIP	0	5%	1/8W	
R561	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R562	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R563	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R565	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R566	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R570	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R572	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R573	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R577	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R578	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R579	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R580	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R581	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R582	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R583	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R584	1-216-864-11	METAL CHIP	0	5%	1/16W	
R585	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R586	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R587	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R588	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R589	1-216-864-11	METAL CHIP	0	5%	1/16W	
R590	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R591	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R592	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R593	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R594	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R595	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R596	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R597	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R599	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R951	1-216-864-11	METAL CHIP	0	5%	1/16W	
R952	1-216-864-11	METAL CHIP	0	5%	1/16W	
R954	1-216-138-00	METAL CHIP	3.3	5%	1/8W	
R955	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R956	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R957	1-216-820-11	METAL CHIP	820	5%	1/16W	
R960	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R966	1-216-864-11	METAL CHIP	0	5%	1/16W	
R989	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R990	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R991	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R992	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R993	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R994	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R995	1-216-817-11	METAL CHIP	470	5%	1/16W	
R996	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1400	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1401	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1404	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R1406	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1408	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R1412	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1413	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1414	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1415	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1508	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1510	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1515	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1516	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1519	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1521	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1524	1-218-894-11	METAL CHIP	91K	0.50%	1/16W	
R1525	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R1526	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref.No.	Part No.	Description	Remark
R1536	1-216-864-11	METAL CHIP 0 5% 1/16W	

< COMPOSITION CIRCUIT BLOCK >

Ref.No.	Part No.	Description	Remark
RB502	1-236-971-11	NETWORK, RES 0	
RB503	1-236-432-11	NETWORK, RES 47K	
RB504	1-236-412-11	NETWORK, RES 1.0K	
RB505	1-236-412-11	NETWORK, RES 1.0K	
RB506	1-236-412-11	NETWORK, RES 1.0K	
RB510	1-236-412-11	NETWORK, RES 1.0K	
RB512	1-236-412-11	NETWORK, RES 1.0K	
RB513	1-236-971-11	NETWORK, RES 0	
RB515	1-236-904-11	NETWORK, RES 1.0K	
RB516	1-236-904-11	NETWORK, RES 1.0K	
RB518	1-236-971-11	NETWORK, RES 0	
RB519	1-236-971-11	NETWORK, RES 0	
RB520	1-236-904-11	NETWORK, RES 1.0K	
RB523	1-236-432-11	NETWORK, RES 47K	
RB524	1-236-908-11	NETWORK, RES 10K	
RB525	1-236-424-11	NETWORK, RES 10K	
RB526	1-236-908-11	NETWORK, RES 10K	
RB527	1-236-424-11	NETWORK, RES 10K	
RB528	1-236-424-11	NETWORK, RES 10K	
RB529	1-236-424-11	NETWORK, RES 10K	
RB530	1-236-424-11	NETWORK, RES 10K	
RB531	1-236-424-11	NETWORK, RES 10K	
RB532	1-236-424-11	NETWORK, RES 10K	
RB535	1-236-908-11	NETWORK, RES 10K	
RB536	1-236-412-11	NETWORK, RES 1.0K	
RB537	1-236-412-11	NETWORK, RES 1.0K	
RB542	1-236-412-11	NETWORK, RES 1.0K	
RB543	1-236-412-11	NETWORK, RES 1.0K	
RB544	1-236-412-11	NETWORK, RES 1.0K	
RB549	1-236-971-11	NETWORK, RES 0	
RB550	1-236-971-11	NETWORK, RES 0	
RB552	1-236-412-11	NETWORK, RES 1.0K	
RB554	1-236-971-11	NETWORK, RES 0	

< VARIABLE RESISTOR >

Ref.No.	Part No.	Description	Remark
RV202	1-238-086-11	RES, ADJ, CERMET 470	

< VIBRATOR >

Ref.No.	Part No.	Description	Remark
X201	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X501	1-579-049-21	VIBRATOR, CRYSTAL (32kHz)	
X502	1-760-315-11	VIBRATOR, CRYSTAL (11.719MHz)	
XTL501	1-579-369-21	VIBRATOR (10MHz)	

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Ref.No.	Part No.	Description	Remark
*	A-7072-168-A	ZB-2 (SL) BOARD, COMPLETE	

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(Ref. No. 3,000 Series)

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN101	1-691-483-21	CONNECTOR, FFC/FPC 4P	

< BATTERY HOLDER >

Ref.No.	Part No.	Description	Remark
LI101	1-550-104-11	HOLDER, BATTERY	

****

MISCELLANEOUS

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Ref.No.	Part No.	Description	Remark
111	1-467-676-11	SWITCH BLOCK, CONTROL (CK)	
⚠162	1-452-673-11	CRT ASSY (M01KXX90WB)	
163	1-651-894-11	FP-86 FLEXIBLE BOARD	
201	1-467-649-81	SWITCH BLOCK, CONTROL (FK)	
208	1-691-471-11	CONNECTOR, TRANSLATION 11P	
212	1-651-891-11	FP-52 FLEXIBLE BOARD	
260	1-765-362-11	CABLE, FLAT (FFC-134)	
262	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
262	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
262	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
264	1-547-558-21	FILTER BLOCK, OPTICAL	
801	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	
J201	1-537-731-11	TERMINAL BOARD	
M003	1-542-259-11	MICROPHONE, CAP	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY (Z), LM (LOADING)	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	
S001	1-572-986-11	SWTICH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	

Be sure to read "Note on the CCD Imager replacement" on page 4-5 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	
⚠W901	1-540-019-42	SOCKET ASSY, CRT	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR380E/TR380EU)	
	1-574-039-11	CORD, CONNECTION (A/V connecting cable (monaural), 1.5m) (TR370E/TR380E)	
	1-764-622-11	ADAPTOR, CONVERSION (TR370E/TR380E:AEP, UK, Russian)	
	1-770-019-11	ADAPTOR, CONVERSION (TR380E:HK)	
	3-712-673-01	SCREWDRIVER (TR380EU)	
	3-798-488-41	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TR380EU)	
	3-798-488-51	MANUAL, INSTRUCTION (ARABIC, PERSIAN) (TR380EU)	
	3-798-488-61	MANUAL, INSTRUCTION (CHINESE) (TR380EU)	
	3-798-692-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR370E:UK/TR380E:AEP, UK)	
	3-798-692-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (TR370E:AEP/TR380E:AEP)	
	3-798-692-51	MANUAL, INSTRUCTION (FRENCH, DUTCH) (TR370E:AEP/TR380E:AEP)	
	3-798-692-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE) (TR380E:AEP)	
	3-798-692-71	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TR380E:Russian)	
	3-798-693-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR380E:E, AUS, HK, JE)	
	3-798-693-41	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR380E:E, HK, JE)	
	3-798-693-51	MANUAL, INSTRUCTION (ARABIC) (TR380E:E)	
	3-798-693-61	MANUAL, INSTRUCTION (CHINESE) (TR380E:E, HK, JE)	
	3-947-969-21	BELT (S), SHOULDER	
*	3-961-062-01	CUSHION (LOWER)	
*	3-961-693-01	CUSHION, ACC	
*	3-962-533-41	INDIVIDUAL CARTON (TR380E:AEP, UK)	
*	3-962-533-51	INDIVIDUAL CARTON (TR380E:E, AUS, HK, JE)	
*	3-962-533-61	INDIVIDUAL CARTON (TR380EU)	
*	3-962-533-91	INDIVIDUAL CARTON (TR380E:Russian)	
*	3-964-956-21	INDIVIDUAL CARTON (TR370E)	
	A-7003-801-A	RFU ADAPTOR (RFU-99E) (TR380EU)	
**	AC-V25A/V25B/V25C/V15	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

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****
HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 6
ADJUSTMENTS

6-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–24.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (42P, 0.8 mm)	J-6082-285-A	For extension between the VC-160 board (CN601) and VS-124 board (CN203)
J-8	Extension cable (9P, 0.8 mm)	J-6082-288-A	For extension between the FK board and VS-124 board (CN502)
	Extension cable (18P, 0.8 mm)	J-6082-289-A	For extension between the CK board and VS-124 board (CN503)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

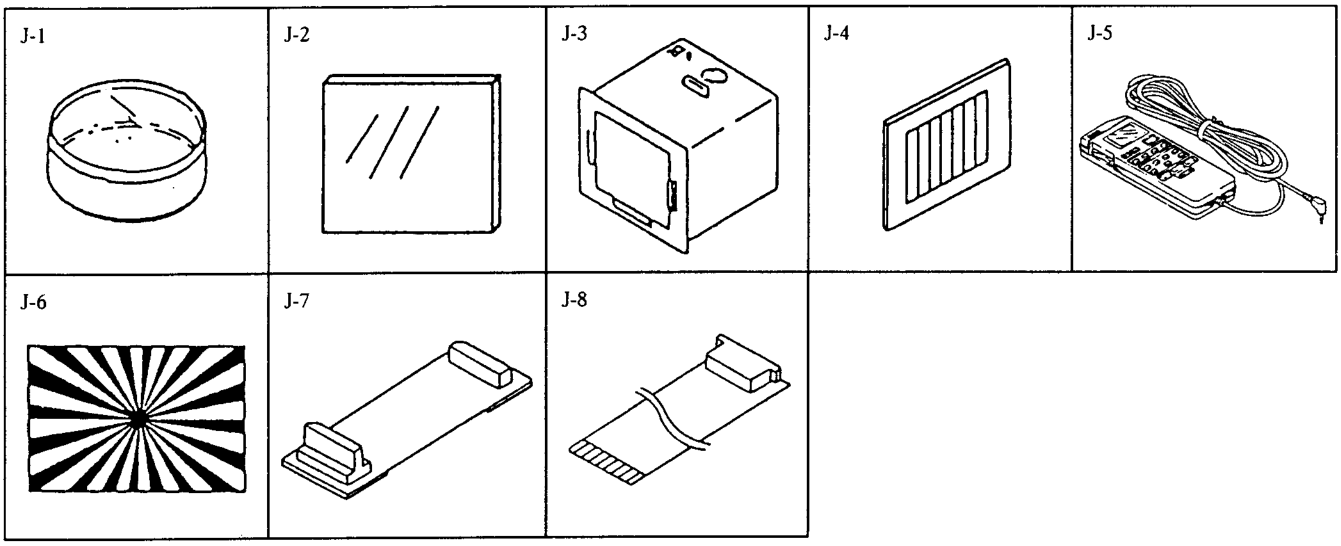


Fig. 6-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC-160 board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 6-1-3.
2) The F panel block (MA-231 board) is not required in adjustments. Remove the following connector.
   1. CN402 of the AU-183 board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS-124 board
   2. CN206 of VS-124 board
   3. CN101 of ZB-2 board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.

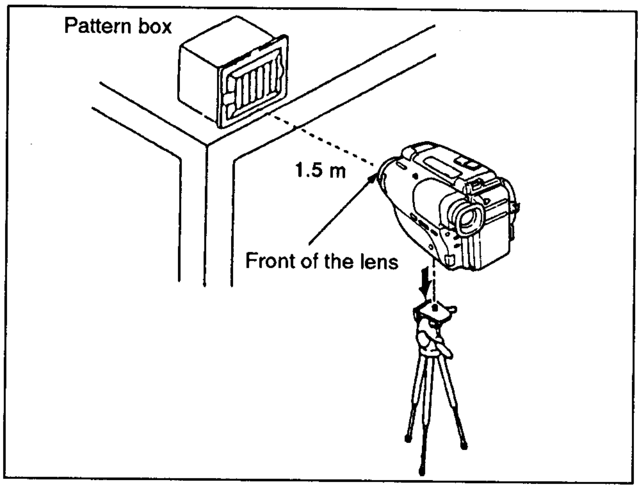
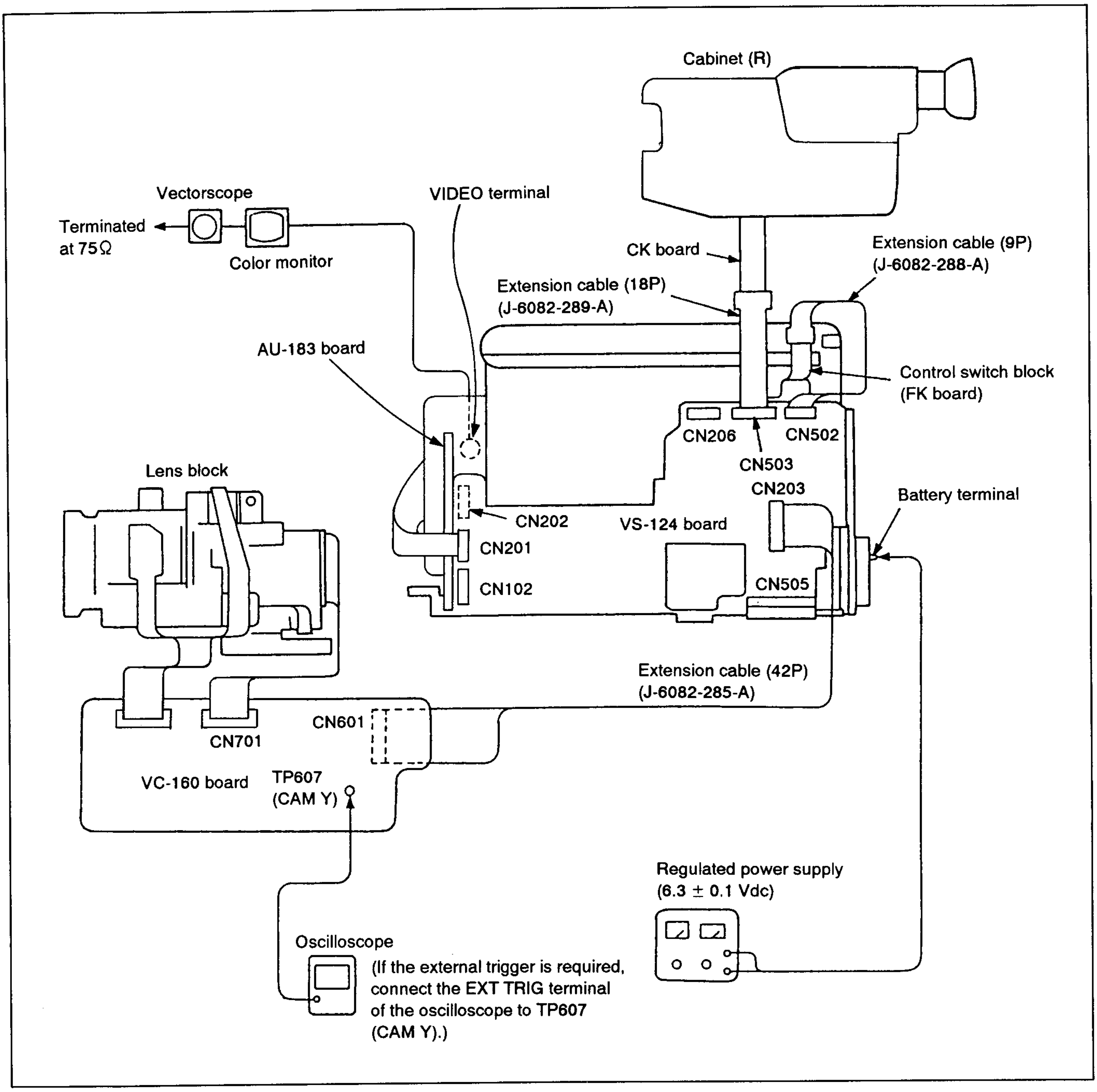


Fig. 6-1-2.

Note 1: Setting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.


Cabinet (R)
Vectorscope
Terminated at 75Ω
Color monitor
VIDEO terminal
CK board
Extension cable (9P) (J-6082-288-A)
Extension cable (18P) (J-6082-289-A)
AU-183 board
Control switch block (FK board)
CN206
CN502
CN503
CN203
Lens block
Battery terminal
CN202
VS-124 board
CN201
CN102
CN505
Extension cable (42P) (J-6082-285-A)
CN601
CN701
VC-160 board
TP607 (CAM Y)
Regulated power supply (6.3 ± 0.1 Vdc)
Oscilloscope

(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to TP607 (CAM Y).)

Fig. 6-1-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

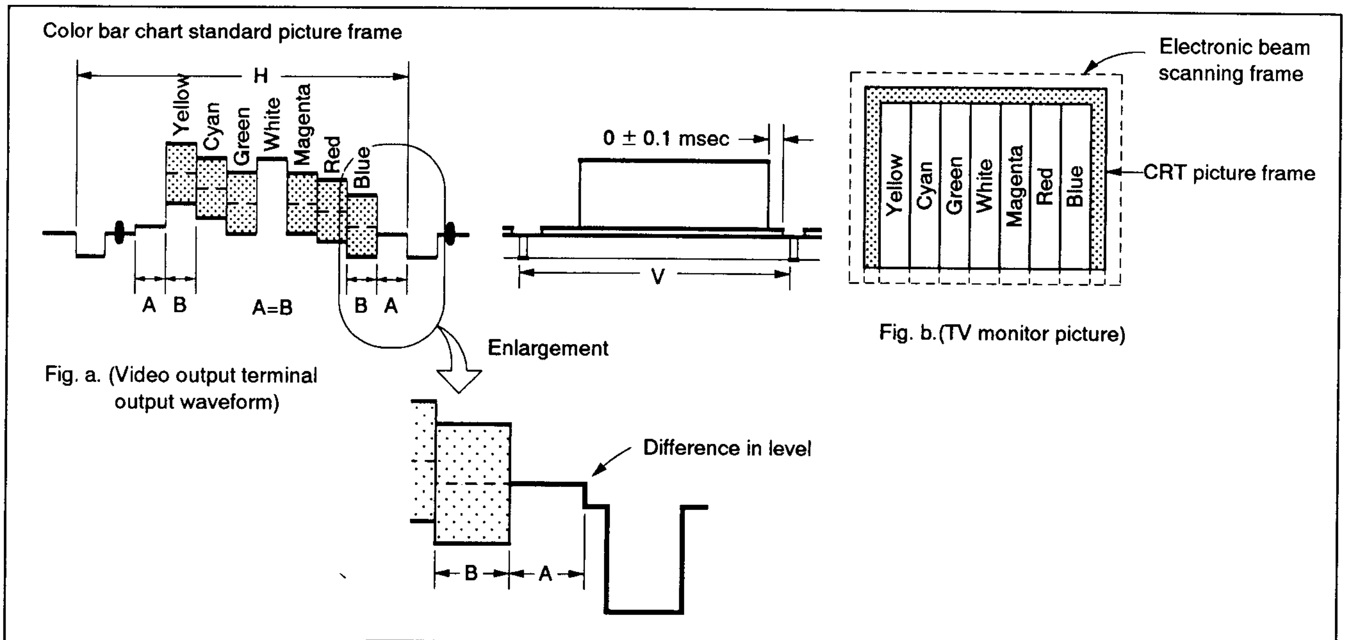
1. Camera/player power switch
   (Control switch block (CK board))·····················Camera
2. Standby switch (Control switch block (FK board)) ·· Standby
3. PROGRAM AE button (Control switch block (CK board))
   ···Off
4. BACK LIGHT button (Control switch block (CK board))
   ···Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 6-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (Don't touch the zoom switch)


Color bar chart standard picture frame

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 6-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 6-1-5.

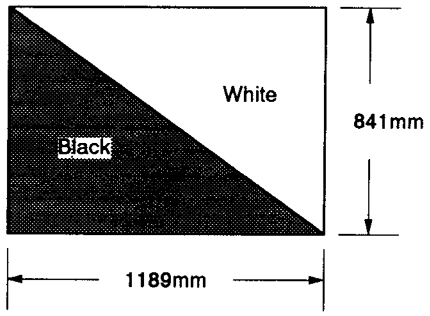

White
Black
841mm
1189mm

Fig. 6-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

Use the adjusting remote commander to change the coefficient of the digital signal processing or the EVR data.
The adjusting remote commander uses the remote commander signal line (LANC) to perform the bidirectional communication with the camera microprocessor. The effect data of the bidirectional communication must be written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 6-1-6.

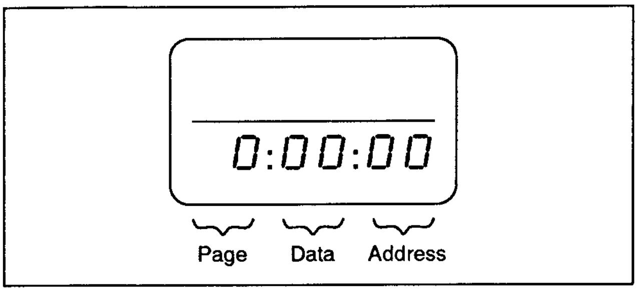


Fig. 6-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 6-1-1.

   - Changing the address
     The address increases when the FF (►►) button is pressed, and decreases when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing “Page F Data Initialization” and “Page F Data Modification”. They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: < >: Setting data when the data of page: 6, address: 10 is 10.
[ ]: Setting data when the data of page: 6, address: 10 is 20.

Address	Adjustment data	
	Initial value	Memo column
00	7D	7D
01 Note 4	<2B>, [23]	<2B>, [23]
02	00	00
03	00	00
04	80	
05	80	
06	80	
07	80	
08	2D	
09	26	
0A	FA	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	36	
14	3C	
15	60	
16	0D	
17	A3	
18	12	
19	8E	
1A	10	
1B	E2	
1C	0C	0C
1D	00	00
1E	80	80
1F	80	80
20	79	79
21	79	79
22	00	00
23	59	59
24	4C	4C
25	A5	A5
26 Note 4	<23>, [45]	<23>, [45]

Table 6-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
27	3F	3F
28	23	23
29	0E	0E
2A	04	04
2B	48	48
2C	FF	FF
2D	42	42
2E	17	17
2F	28	28
30	00	00
31	00	00
32	58	58
33	68	68
34	01	01
35	35	35
36	02	02
37	FD	FD
38	63	63
39	6A	6A
3A	50	50
3B	20	20
3C	C0	C0
3D	00	00
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
4A	00	
4B	00	
4C	00	
4D	00	

Table 6-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
4E	00	00
4F	20	20
50	12	12
51	02	02
52	66	66
53	18	18
54	66	66
55	9F	9F
56	66	66
57	66	66
58	59	59
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	1E	1E
5F	5C	5C
60	3A	3A
61	33	33
62	0C	0C
63	26	26
64	24	24
65	02	02
66	04	04
67	05	05
68	00	00
69	00	00
6A	00	00
6B	00	00
6C	00	00
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	0F	0F
73	0F	0F
74	02	02
75	63	63
76	1B	1B
77	E8	E8
78	A0	A0
79	28	28

Table 6-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7A	0D	0D
7B	50	50
7C	58	58
7D	88	88
7E	66	66
7F	46	46
80	8F	8F
81	00	00
82	20	20
83	18	18
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	30	30
8A	50	50
8B	60	60
8C	80	80
8D	1D	1D
8E	50	50
8F	00	00
90	00	00
91	77	77
92	00	00
93	FB	FB
94	02	02
95	32	32
96	6B	6B
97	8D	8D
98	A1	A1
99	30	30
9A	30	30
9B	21	21
9C	91	91
9D	72	72
9E	00	00
9F	00	00
A0	00	00
A1	00	00
A2	00	00
A3	00	00
A4	02	02
A5	80	80

Table 6-1-2 (4).

Address	Adjustment data	
	Initial value	**Memo column**
A6	00	00
A7	80	80
A8	00	00
A9	80	80
AA	00	00
AB	80	80
AC	00	00
AD	00	00
AE	02	02
AF	87	87
B0	39	39
B1	25	25
B2	39	39
B3	25	25
B4	32	32
B5	4A	4A
B6	00	00
B7	20	20
B8	00	00
B9	05	05
BA	00	00
BB	20	20
BC	80	80
BD	00	00
BE	00	00
BF	00	00
C0 to FF		

Table 6-1-2 (5).

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 6-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 6-1-3.

1-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-77 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ㉙ of CN901
Specified value	4.9 ± 0.1 Vdc
D3.6V check	
Measurement point	Pins ㉑ and ㉒ of CN901
Specified value	3.6 ± 0.1 Vdc
CAM 5V check	
Measurement point	Pins ㉕ and ㉖ of CN901
Specified value	4.85 ± 0.1 Vdc
CAM 15V check	
Measurement point	Pin ㉗ of CN901
Specified value	15 ± 0.3 Vdc
CAM -9V check	
Measurement point	Pin ㉛ of CN901
Specified value	$-8.5^{+0.25}_{-0.4}$ Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Set data: 01 to page: 6, address: 00.
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: 2F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

When the page F data is initialized, change the data by manual input.

Note 1: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

Note 2: When changing address: 00, set the data of page: 6, address: 00 to 80.

Note 3: < >: Setting data when the data of page: 6, address: 10 is 10.

[ ]: Setting data when the data of page: 6, address: 10 is 20.

Address	Data
00	7D
01 Note 3	<2B>, [23]
03	00
1C	0C
25	A5
2A	04
2B	48
2D	42
2E	17
2F	28
30	00
32	58
34	01
35	35
37	FD
38	63
54	66
57	66
58	59
5E	1E
60	3A
6E	02
74	02
77	E8
83	18
94	02
B6	00

Table 6-1-4.

4. 28 MHz Original Oscillation Adjustment (VC-160 board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

Subject	Not required
Measurement Point	Pin ⑧ of IC753 (JL708) (TP709)
Measuring Instrument	Frequency counter
Adjusting Element	CT701
Specified Value	14187500 ± 70 Hz

Adjusting method:

1) Use CT701 to adjust the oscillation frequency to 14187500 ± 70 Hz.

5. V SUB Adjustment

Set the CCD imager V SUB voltage to the voltage specified for the imager.

Subject	Not required
Adjustment Page	F
Adjustment Address	04

Adjusting Method:

1) Read the V SUB voltage code of the CCD imager.
   Obtain the corresponding V SUB data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the V SUB data to page: F, address: 04.
4) Press the PAUSE button of the adjusting remote commander.

V SUB			V SUB		
Voltage Code	Data	Voltage (Vdc) *1	Voltage Code	Data	Voltage (Vdc) *1
e	71	9.0	q	AD	14.0
f	77	9.5	r	B3	14.5
g	7D	10.0	s	B9	15.0
h	83	10.5	t	BF	15.5
j	89	11.0	u	C5	16.0
k	8F	11.5	v	CB	16.5
l	95	12.0	w	D1	17.0
m	9B	12.5	x	D7	17.5
n	A1	13.0	y	DD	18.0
p	A7	13.5	z	E2	18.5

*1: The V SUB voltages (TP703) given are reference values.

6. VRG Adjustment

Set the CCD imager V RG voltage to the voltage specified for the imager.

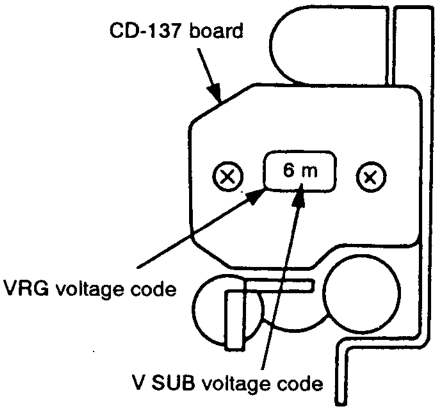
Subject	Not required
Adjustment Page	F
Adjustment Address	05

Adjusting Method:

1) Read the VRG voltage code of the CCD imager.
   Obtain the corresponding VRG data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the VRG data to page: F, address: 05.
4) Press the PAUSE button of the adjusting remote commander.

VRG		
Voltage Code	Data	Voltage (Vdc) *2
1	33	1.0
2	4E	1.5
3	69	2.0
4	84	2.5
5	9F	3.0
6	BA	3.5
7	D5	4.0

*2: The VRG voltages (TP707) given are reference values.



(Example) When "6m" is displayed:
The V SUB voltage code is "m" and therefore the V SUB data will be "9A".
The VRG voltage code is "6" and therefore the VRG data will be "BA".

Fig. 6-1-7.

7. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of LCD or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	06, 07
Specified Value	32 to 36 during IRIS OPEN B4 to B8 during IRIS CLOSE

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and this data is named W_1.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and this data is named K_1.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and this data is named K_2.
15) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \cdots\cdots \text{Equation 1}$$

$$B' = W_1' - K_1' \cdots\cdots \text{Equation 2}$$

$$X1' = \frac{2080 + (48 \times A') - (16 \times B')}{A'} \cdots\cdots \text{Equation 3}$$

17) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
18) Set data: X_1 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "34".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and this data is named W_0. If W_0 lies within the "B4" to "B8" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert W_0 to hexadecimal notation, and obtain W_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 52 \cdots\cdots \text{Equation 4}$$

$$X_2' = \frac{(130 - B') \times (X_1' - 48) + 48 \times C'}{C'} \cdots\cdots \text{Equation 5}$$

(X_1' and B' are values obtained from equations 2 and3)

25) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
26) Set data X_2 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "B6".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "32" to "36" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

8. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

Subject	Chart for flange back adjustment (2000 ± 5 mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	16, 17, 18, 19, 1A, 1B

Adjusting method:

1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 21 is 00.
4) Check that the page: F, address: 16 to 1B data is at the initial value. (Refer to Table 6-1-2. "Page F address list")
5) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B.)
7) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Turn off the main power supply (6.3V).

9. Flange Back Check

Subject	Siemens star (2m from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Shoot the siemens star with the zoom TELE end.
4) Check that the lens is focused. (Note 2)
5) Set data: 01 to page: 6, address: 25.
6) Shoot the siemens star with the zoom WIDE end.
7) Check that the lens is focused.

Note: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.

1) Set data: 0C to page: 6, address: 02.
2) Page A shows the state of the focus.

A : 00 : XX → (Odd: Focused
Even: Unfocused)

Processing after compleating adjustments

1) Set data: 00 to page: 6, address: 02.
2) Set data: 00 to page: 6, address: 25.

10. Picture Frame Setting

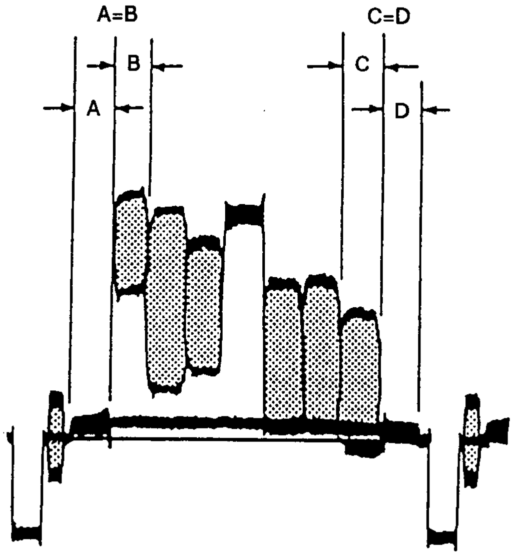
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

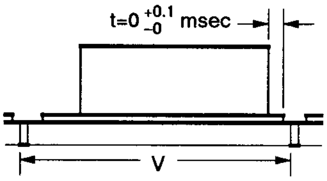
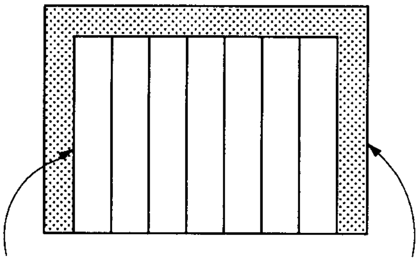


Fig. 6-1-8.

Check on the TV monitor



Color bar chart picture frame

TV monitor picture frame

Fig. 6-1-9.

11. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	08, 09, 0A, 0B
Specified Value	All color luminance points should settle within each color reproduction frame.

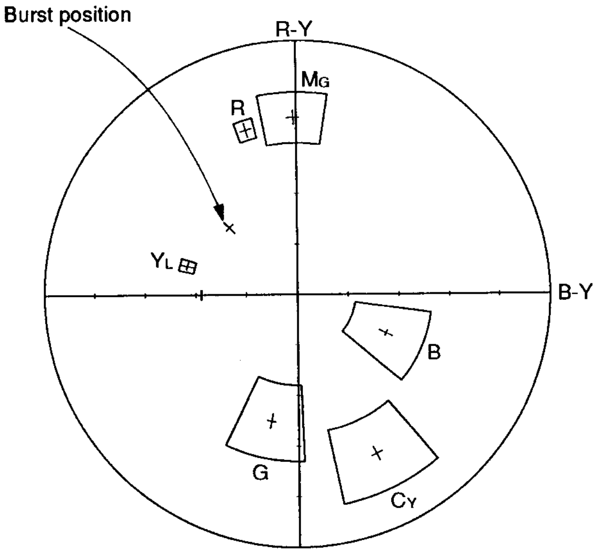


Fig. 6-1-10.

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 00 to page: 6, address: 03.
3) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 02 to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
5) Set data: C6 to page: F, address: 63, and press the PAUSE button of the adjusting remote commander.
6) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
7) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame.

   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.
   If not, the new data will not be written to the memory.
8) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 12 to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
3) Set data: 26 to page: F, address: 63, and press the PAUSE button of the adjusting remote commander.
4) Set data: 10 to page: 6, address: 03.

12. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors, measure the light level and write it in the EEPROM.
If the level is not correct, the white balance will not be accurate.

Subject	White pattern
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	13, 14

Adjusting method:

1) Set data: 01 to page: 6, address: 00
2) Set data: 01 to page: 1, address: 00
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0E to page: 6, address: 02.
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations.
   (Equations 1 and 2 are for decimal notation calculation)
   When $D_2 \geqq$ D0
   $D_3'=D_1'-21$ ································Equation 1
   When $D_2 <$ D0
   $D_3'=D_1'-22$ ································Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations.
   (Equations 3 and 4 are for decimal notation calculation)
   When $D_5 \geqq$ F0
   $D_6'=D_4'-13$ ·····································Equation 3
   When $D_5 <$ F0
   $D_6'=D_4'-14$ ·····································Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.

13. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	White pattern standard picture frame
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	15
Specified Value	C4 to CC

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 2, address: 00.
5) Set data: 01 to page: 2, address: 42.
6) Set data: 5A to page: 2, address: 40.
7) Set data: 54 to page: 2, address: 41.
8) Set data: 01 to page: 6, address: 02.
9) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
10) Change the data of page: F, address: 15 and adjust so that the DDS display data lies within the "C4" to "CC".
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.
5) Set data: 01 to page: 2, address: 00.
6) Set data: 00 to page: 2, address: 40.
7) Set data: 00 to page: 2, address: 41.
8) Set data: 00 to page: 2, address: 42.
9) Set data: 00 to page: 2, address: 00.

14. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 11 is 00.
4) Check that the data of page: 6, address: 03 is 10.
5) Wait for 2 seconds.
6) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
8) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

15. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2A40 to 2AC0 B ratio: 5E00 to 5F00

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6, address: 00.
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Set data: 00 to page: 1, address: 00.

16. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 6-1-12. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the center of the white luminance point is within the circle shown in Fig. 6-1-12.A.
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Place the C14 filter on the lens.
8) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-12. B.
9) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-12. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

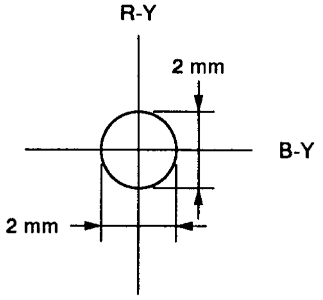


Fig. 6-1-12. A

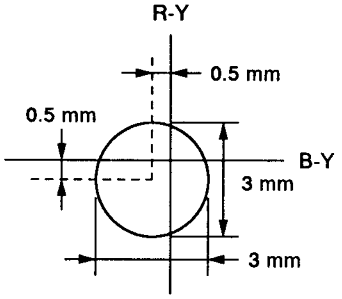


Fig. 6-1-12. B

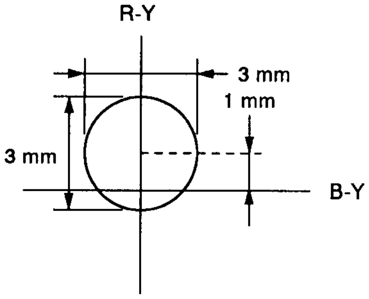


Fig. 6-1-12. C

17. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	SYNC level=300 ± 20 mV BURST level=300 ± 30 mV

Checking method:

1) Check that the SYNC level and BURST level satisfy the specified values.

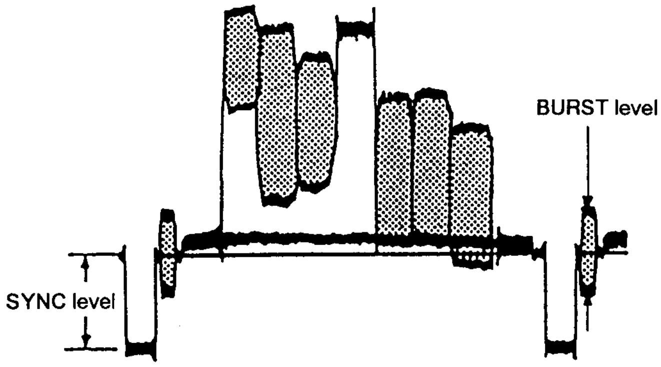


Fig. 6-1-13.

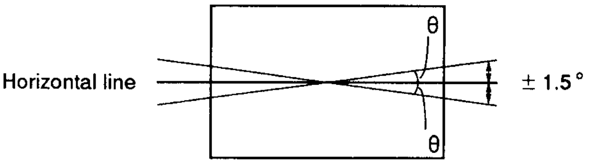
1-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

1-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 1.5°

Adjusting method:

1) Adjust RV904 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening screw.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 6-1-14.

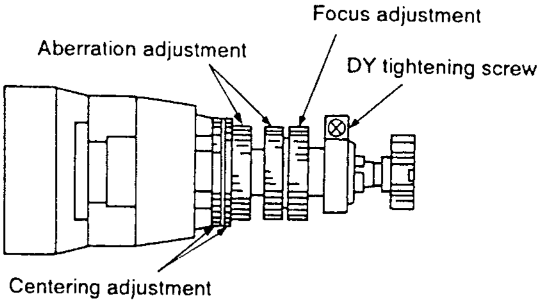


Fig. 6-1-15.

1-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 6-1-15.)

   Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

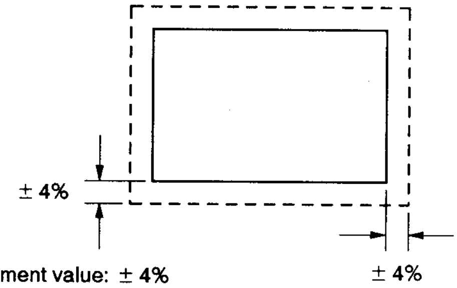


Fig. 6-1-16.

1-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus.
   (Refer to Fig. 6-1-15.)

1-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	T < 2 • D, F < D

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

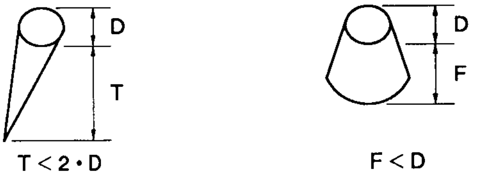


Fig. 6-1-17.

1-3-5. Horizontal Amplitude Adjustment (VF-65 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C909
Specified Value	6 ± 3%

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 3% (Left and right totals). (Refer to Fig. 6-1-19.)

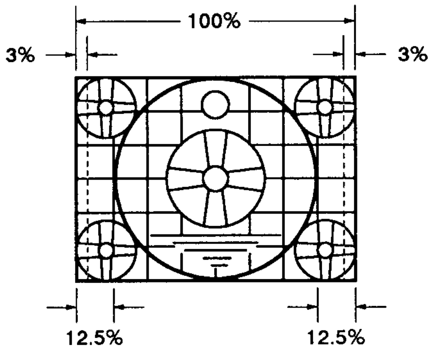
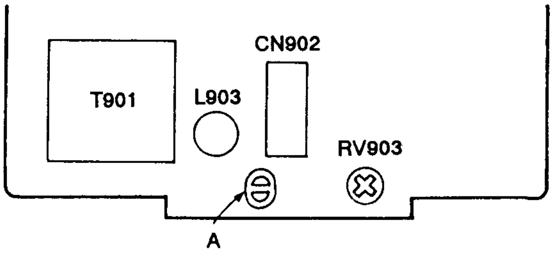


Fig. 6-1-18.



VF-65 board (Component side)

Section A	Size H
Open	Small
Short	Big

Fig. 6-1-19.

1-3-6. Vertical Amplitude Adjustment (VF-65 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV903
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

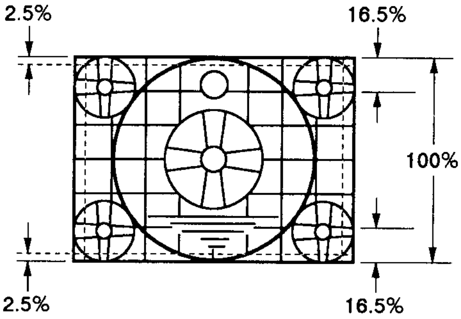


Fig. 6-1-20.

1-3-7. Brightness Adjustments (VF-65 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV904

Adjusting method:

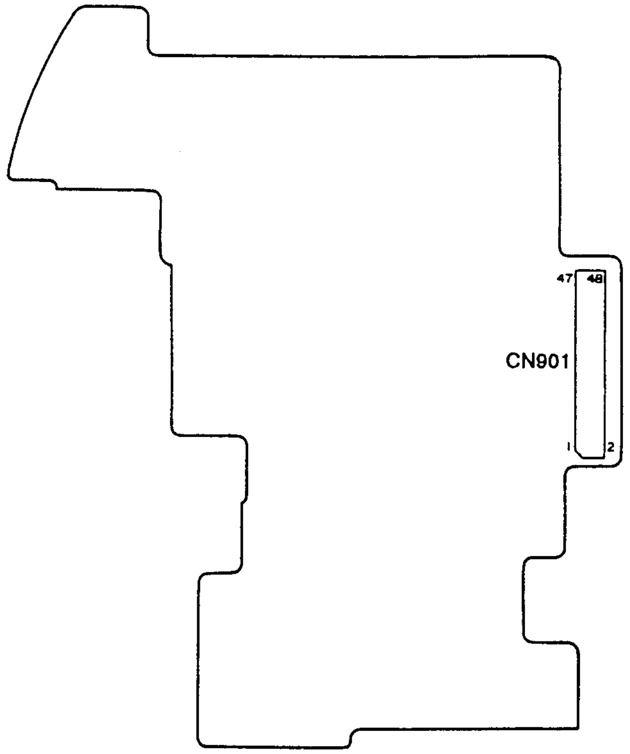
1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-3-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

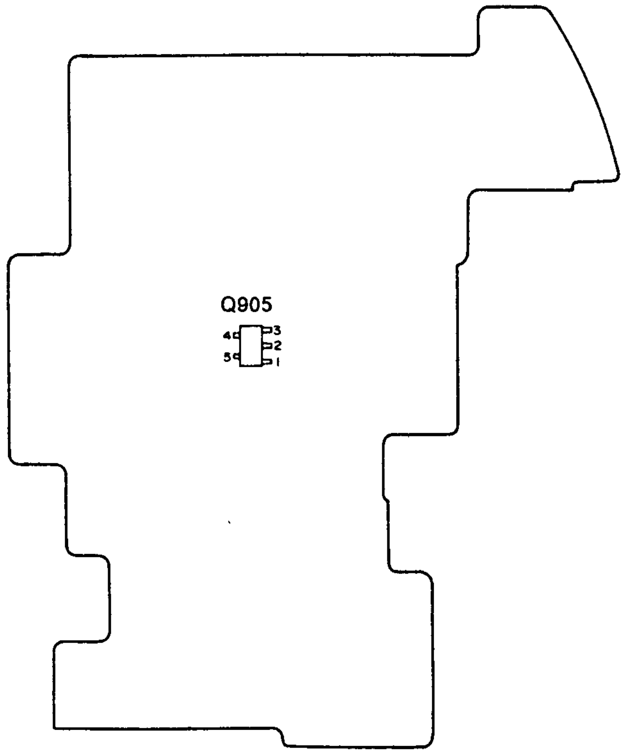
"1-3-5. Horizontal Amplitude Adjustment" and "1-3-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [1-3-7. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "1-3-3. Focus Adjustment" and "1-3-4. Aberration Adjustment".

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

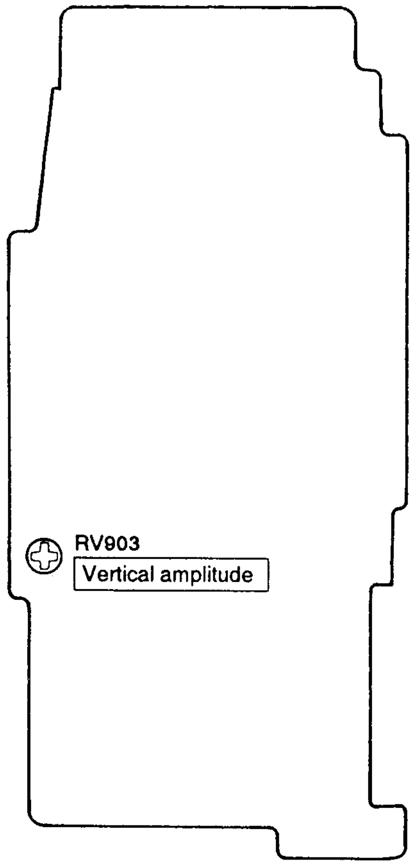
DD-77 BOARD (CONDUCTOR SIDE)


47
48
CN901
1
2

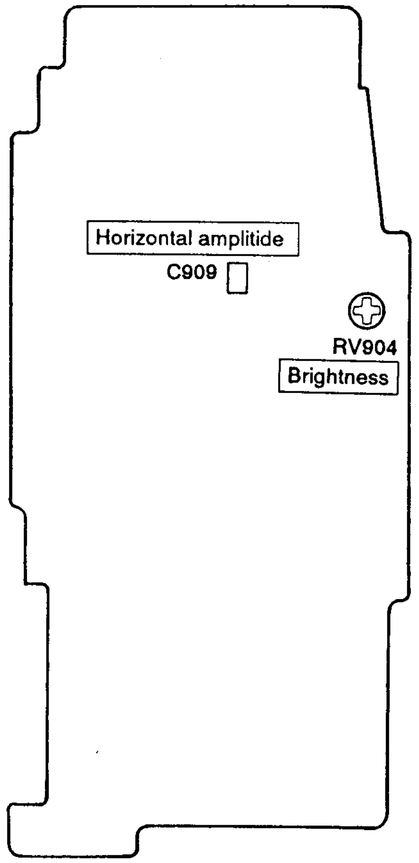
DD-77 BOARD (COMPONENT SIDE)



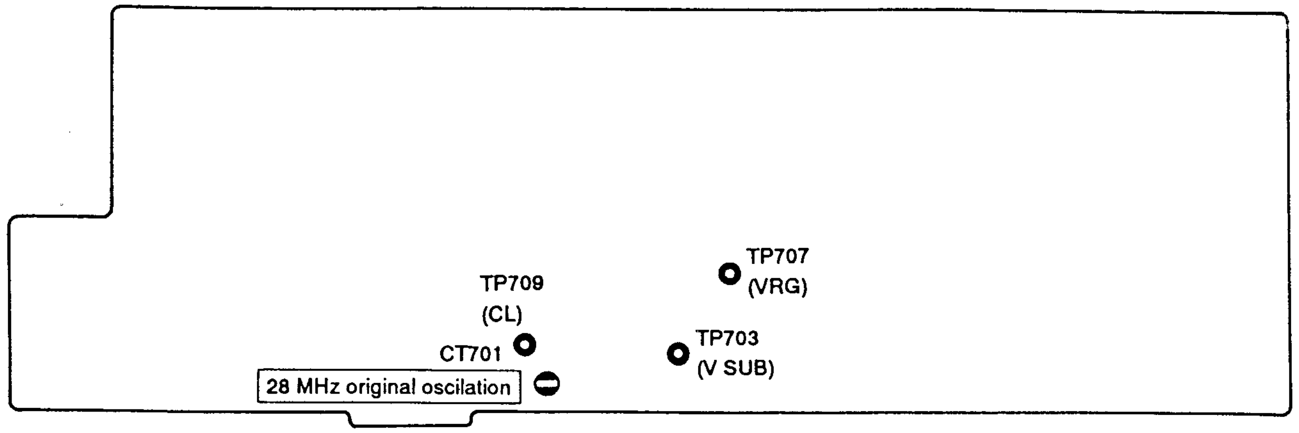
VF-65 BOARD (COMPONENT SIDE)


RV903
Vertical amplitude

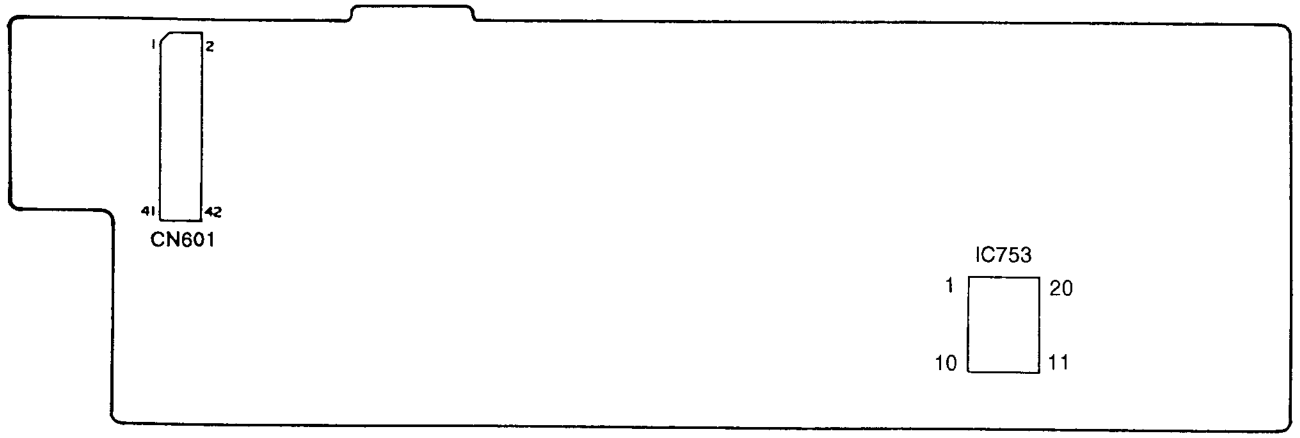
VF-65 BOARD (CONDUCTOR SIDE)


Horizontal amplitide
C909
RV904
Brightness

VC-160 BOARD (COMPONENT SIDE)


TP709
(CL)
CT701
28 MHz original oscilation
TP707
(VRG)
TP703
(V SUB)

VC-160 BOARD (CONDUCTOR SIDE)


1
2
41
42
CN601
IC753
1
20
10
11

6-2. MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual IV A Mechanism".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode·········· 06
Forced camera power supply ON mode······ 05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
5) Select page: D, address: 02, and set data: 03.
   (Perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ③ of CN102 of VS-124 board
   External trigger-Pin ④ of CN102 of VS-124 board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1CP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual IV (A Mechanism).
9) Perform "Processing after operations", after completing adjustments.

CN102 of VS-124 board

1	PB ´CH RF
2	PB PCM RF
3	PB RF
4	RF SWP
5	RP GND
6	REC 2

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Remove the power supply from the unit.

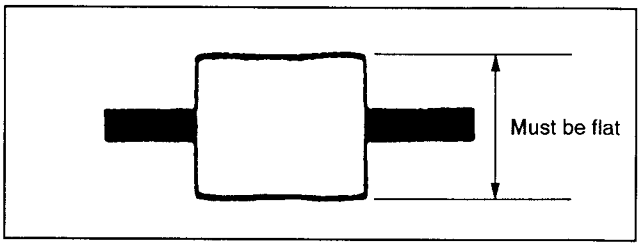


Fig. 6-2-1.

6-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–56.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote commander for adjustment (J-6082-053-B)
13) VC-160 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-285-A
14) Control switch block (FK board) extension cord (9P, 0.8 mm)
    Part Code: J-6082-288-A
15) Control switch block (CK board) extension cord (18P, 0.8 mm)
    Part Code: J-6082-289-A

3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the camera input.
   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera power supply ON mode" using the adjusting remote commander (Note 1).
   After completing adjustments, be sure to exit the "forcible camera power supply ON mode" (Note 3).
2) The F panel block (MA-231 board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN402 of the AU-183 board (8P, 0.8 mm)
3) AU-183 board is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN202 of the VS-124 board (24P, 0.8 mm)
4) The view finder (VF-65 board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN206 of the VS-124 board (14P, 0.5mm)
5) The cabinet (R) (CK board: Power supply switch, camera function switch) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera power supply ON mode" is set. In this case, disconnect the following connectors. (Note 2).
   1. CN503 of the VS-124 board (18P, 0.8 mm)
   2. CN101 of the ZB-2 board (4P, 0.8 mm)
   However, as disconnecting these connectors means disconnecting the 3V lithium power supply, data set by the user such as the date, time, and menu will be lost. After completing the adjustments, set these data again, and be sure to exit the "forcible VTR power supply ON mode" or "forcible camera power supply ON mode". (Note 3)
   When connecting the cabinet (R) using the extension cord, use the following type.
   1. J-6082-289-A (18P, 0.8 mm)
6) The lens block and VC-160 board are not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN203 of the VS-124 board (42P, 0.8 mm)
   Connect the following when removing the VC-160 board.
   1. Connect Pin ㉒ (REG H) and Pin ⑦ (D3.6V) of CN203 of the VS-124 board with a jumper wire.
   When connecting the VC-160 board using the extension cord, use the following type.
   1. J-6082-285-A (42P, 0.8 mm)

7) The audio board (AU-183 board) is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN202 of the VS-124 board (24P, 0.8 mm)
8) When opening the VS-124 board, disconnect the following connectors.
   1. CN502 of the VS-124 board (9P, 0.8 mm)

   The VTR function keys will not work. Use the remote commander to perform operations other than EJECT.
   When connecting the FK board and CN502 of VS-124 board using the extension cord, use the following type.
   1. J-6082-288-A (9P, 0.8 mm)

Note 1: Setting the "forcible camera power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 01 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 2: Setting the "forcible VTR power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

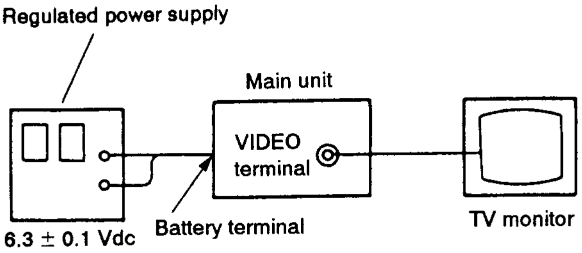
Note 3: Exiting the "forcible power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

3-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 6-3-1.

Note 1: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by VTR. It is recommendet that a pattern generator with a Y/C separation output terminal be used as much as possible.

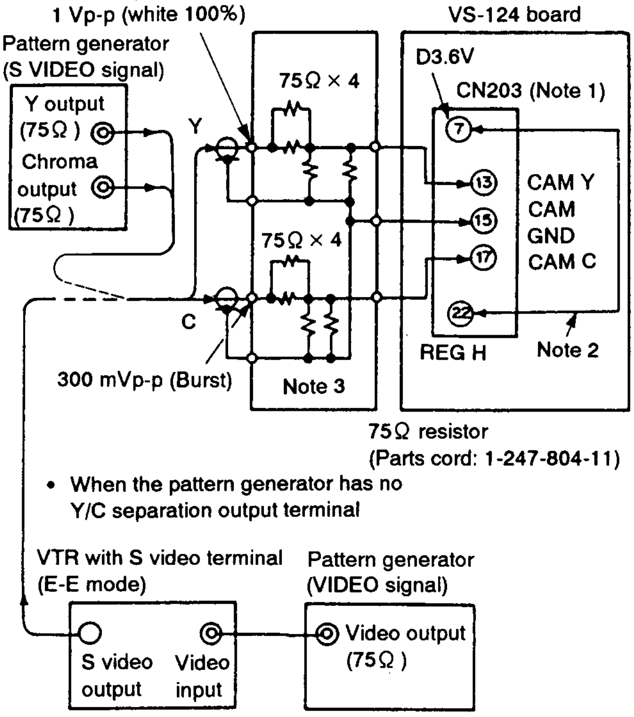
Connecting the TV monitor and regulated power supply


Regulated power supply
Main unit
VIDEO terminal
6.3 ± 0.1 Vdc
Battery terminal
TV monitor

Connecting the pattern generator

[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera power supply ON mode" using the adjusting remote commander.

- When the pattern generator has a Y/C separation output terminal


1 Vp-p (white 100%)
VS-124 board
Pattern generator (S VIDEO signal)
Y output (75Ω)
Chroma output (75Ω)
Y
75Ω × 4
D3.6V
CN203 (Note 1)
⑦
⑬
⑮
⑰
㉒
CAM Y
CAM GND
CAM C
75Ω × 4
C
300 mVp-p (Burst)
Note 3
REG H
Note 2
75Ω resistor
(Parts cord: 1-247-804-11)
• When the pattern generator has no Y/C separation output terminal
VTR with S video terminal (E-E mode)
Pattern generator (VIDEO signal)
S video output
Video input
Video output (75Ω)

Note 1: Remove the VC-160 board.
Note 2: Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
Note 3: The chroma signal input is not required for some adjustments.

Fig. 6-3-1.

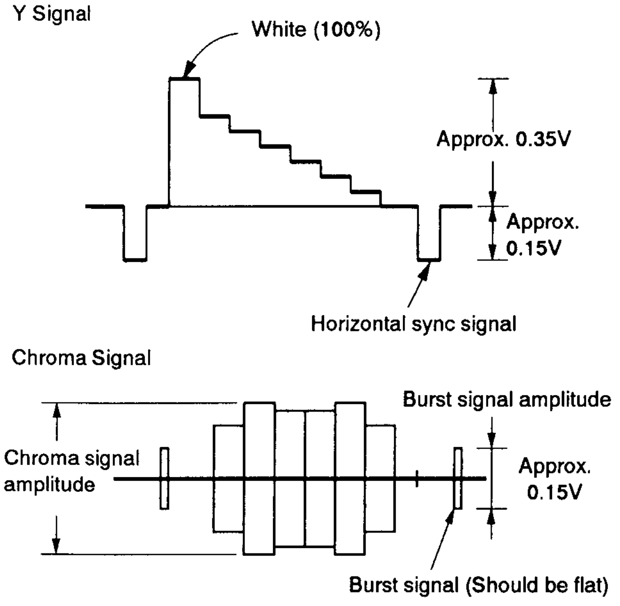
3-1-4. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. S VIDEO signal

Connect the oscilloscope to Pin ⑬ of CN203 on VS-124 board, and check that the sync signal of the Y signal is approximately 0.15 Vp-p and that the amplitude of the video section is approximately 0.35 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS-124 board, and check that the burst signal amplitude of the chroma signal is approximately 0.15 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30 : 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 6-3-2.

Note: Be sure to check in the recording mode.


Y Signal
White (100%)
Approx. 0.35V
Approx. 0.15V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.15V
Burst signal (Should be flat)

Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 6-3-2. Color bar signal of pattern generator

2. VIDEO signal

Connect the oscilloscope to the video terminal, and check that the sync signal amplitude of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30 : 0.66.

The video signal (color bar) used in the adjustment is shown in Fig. 6-3-3.

Note: Be sure to check in the record mode.

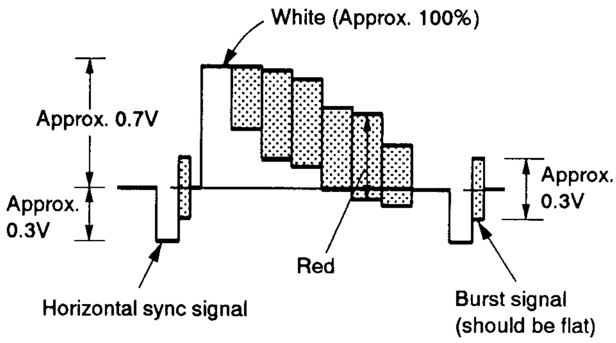

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 6-3-3. Color Bar Signal of Pattern Generator

3-1-5. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	Standard 8 mm	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	Standard 8 mm	MP	LP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. } Color bar section Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4CL	Standard 8 mm	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

Tape type

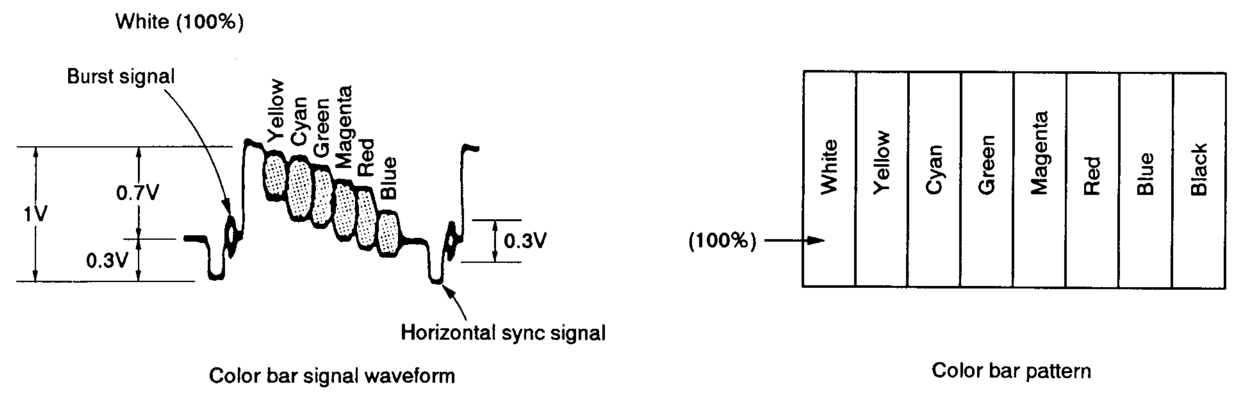
MP············ Particle type metal tape

ME············ Evaporated type metal tape

Table 6-3-1.

Fig. 6-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)



Color bar signal waveform

Color bar pattern

Fig. 6-3-4. Color Bar Signals of the Alignment Tape

3-1-6. Output Level and Impedance

Video output	Phono-jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio output	Phono-jack, –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

3-1-7. Service Mode

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 1, address: 00, before setting the data.

Page D	Address 02

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end

Page D	Address 03

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

* For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.3 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

2. Emergency code

Fault (error) symptoms can be checked.

Page D	Address E4

Last emergency code

……Last error code generated (This data will be renewed each time an error occurs.)

Page D	Address E8

2nd emergency code

……2nd error code generated

Page D	Address EC

First emergency code

……First error code generated

* Be sure to rewrite the data of addresses E4, E8 and EC to 00 after repairs/adjustments.

* When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

3. Emergency mode

The operation mode can be checked during faults.

Page D	Address E5

Last emergency mode
······The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

Page D	Address E9

2nd emergency mode
······The operation mode when the 2nd error is generated

Page D	Address ED

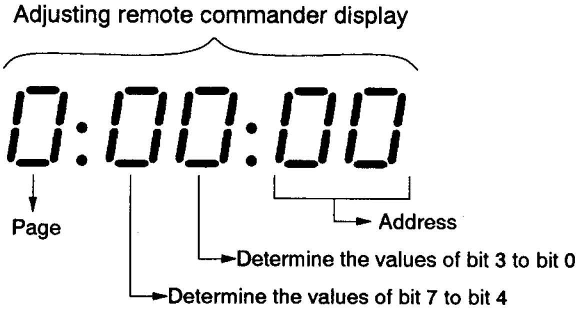
First emergency mode
······The operation mode when the first error is generated

- * Be sure to rewrite the data of addresses E5, E9 and ED to 00 after repairs/adjustments.
- * When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (–)
97	–PB PAUSE
A2	EMERGENCY LOADING
A5	EDIT SEARCH (+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

4. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

Remote controller display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

5. Battery voltage check

Page 2	Address 49

Display Data	Battery Voltage
F0	Approx. 10.6 Vdc
E0	Approx. 9.9 Vdc
D0	Approx. 9.2 Vdc
C0	Approx. 8.5 Vdc
B0	Approx. 7.8 Vdc
A0	Approx. 7.1 Vdc
90	Approx. 6.4 Vdc
80	Approx. 5.7 Vdc
70	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Preparation
2	2	49		The battery voltage can be discriminated by the display data.

* Voltage measurement accuracy is approx. ± 10%.

6. Mechanism controller input/output check

Page 2	Address 83

Bit	IN/OUT Signal	Condition
0		
1	E/L DET	"1"=Hi8, "0"=Normal
2	SP/LP DET	"1"=SP, "0"=LP
3	CLOG DET	"1"=Clog detected, "0"=Others
4	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
5	TAPE PREEND	"1"=Tape preend, "0"=Others
6	DEW DET	"0"=Condensation occured, "1"=Others
7	CASSETTE IN	"0"=No cassette

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	83		The condition of each input signal can be discriminated by differentiating the bit value of the display data.

Page 2	Address 84

Bit	IN/OUT Signal	Condition
0	VA PB MODE	"1"=PB, "0"=REC
1	RP PB MODE	"1"=PB, "0"=REC
2	JOG	"1"=Variable speed playback, "0"=Others
3	ME/MP SW	"1"=ME tape, "0"=Other tape
4	Hi8 MP SW	"1"=Hi8 MP tape, "0"=Other tape
5	SERVO OPERATION	"1"=SP mode, "0"=LP mode
6	VIDEO MUTE	"1"=Mute, "0"=Video output
7	AUDIO MUTE	"1"=Mute, "0"=Audio output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	84		The condition of each signal can be discriminated by differentiating the bit value of the display data.

7. Mode switch and CC DOWN switch check

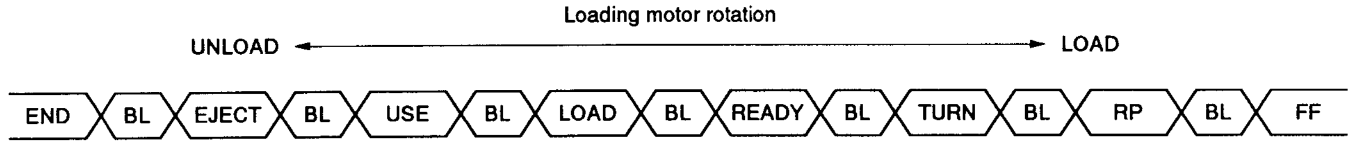
The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E*/F*	BL	Interval of each position
0	1	1	1	7*	END	FULL END processing (T side lock removal)
0	0	1	1	3*	EJECT	Cassette compartment ejection
1	0	1	1	B*	USE	EJECTED (Unskate end)
0	0	1	0	2*	LOAD	LOADING (Skate in)
1	0	0	0	8*	READY	NORMAL STOP position
1	1	0	0	C*	TURN	OFF of pinch roller only with STOP↔FF/REW (oscillating position)
0	1	0	0	4*	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0*	FF	FF/REW

*: Don't care


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

8. Tape top/end sensor check

Page 3	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0E	10	Preparation
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

9. Page D address list

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to D3 and F0 to E3. This has no relation to the adjustment.

Note 4: < > : E, Australian, Russian model
No mark : Other models

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	
11	00	00
12	00	
13	00	
14	B6	B6
15	98	98
16	01	01
17 Note 4	06 <07>	06 <07>
18	05	05
19	00	00
1A Note 4	48 <68>	48 <68>
1B	20	20
1C	00	00
1D	00	00
1E		
1F		

Table 6-3-2. (1)

Address	Adjustment data	
	Initial value	Memo column
20		
21		
22		
23	00	00
24	33	33
25	33	33
26	28	28
27	28	28
28	A8	A8
29	A8	A8
2A	AC	AC
2B	AC	AC
2C	A8	A8
2D	A8	A8
2E	AC	AC
2F	AC	AC
30	E5	E5
31	E5	E5
32	E5	
33	E5	
34	E5	E5
35	E5	E5
36	E5	
37	E5	
38	E6	
39	ED	
3A	E6	
3B	ED	
3C		
3D		
3E		
3F		
40	FF	FF
41	FF	FF
42	B9	
43	B9	
44	FF	FF
45	FF	FF
46	B9	
47	B9	
48		
49		

Table 6-3-2. (2)

Address	Adjustment data	
	Initial value	Memo column
4A		
4B		
4C		
4D		
4E		
4F		
50	A2	A2
51	A1	A1
52		
53		
54	00	00
55	00	00
56	90	90
57	00	00
58	00	00
59	75	75
5A	DF	DF
5B	DF	DF
5C	DF	DF
5D	DF	DF
5E	DF	
5F	DF	DF
60	DF	DF
61	DF	DF
62	DF	DF
63	DF	
64		
65		
66		
67		
68		
69	DF	DF
6A	DF	DF
6B	DF	DF
6C	DF	DF
6D	DF	DF
6E		
6F		
70	A4	
71	85	
72	B0	B0
73	B0	B0

Table 6-3-2. (3)

Address	Adjustment data	
	Initial value	Memo column
74	FF	FF
75	BB	
76	FF	FF
77	97	
78	00	00
79	00	00
7A	7C	7C
7B	7C	7C
7C	00	00
7D	00	00
7E	60	60
7F	60	60
80	99	
81	99	
82	A5	
83	A9	
84		
85	69	69
86	00	00
87	69	
88	BA	BA
89	BA	BA
8A	00	00
8B	48	48
8C	AF	AF
8D	AF	AF
8E	AF	
8F	AF	
90	60	60
91 to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	

Table 6-3-2. (4)

3-2. POWER SYSTEM ADJUSTMENTS

1. Power Voltage Check (DD-77 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
D5V check	
Measurement Point	Pin ㉙ of CN901
Specified Value	4.9 ± 0.1 Vdc
EVF5V check	
Measurement Point	Pin ㊴ of CN901
Specified Value	4.9 ± 0.1 Vdc
VID 5V check	
Measurement Point	Pins ㉓ and ㉔ of CN901
Specified Value	4.9 ± 0.1 Vdc
AU 5V check	
Measurement Point	Pin ㉟ of CN901
Specified Value	4.9 ± 0.1 Vdc
RP 5V check	
Measurement Point	Pin ⑳ of CN901
Specified Value	4.9 ± 0.1 Vdc
CAM5V check	
Measurement Point	Pins ㉕ and ㉖ of CN901
Specified Value	4.85 ± 0.1 Vdc
SS 3.6V check	
Measurement Point	Pin ㉝ of CN901
Specified Value	3.6 ± 0.1 Vdc
D3.6V check	
Measurement Point	Pins ㉑ and ㉒ of CN901
Specified Value	3.6 ± 0.1 Vdc
CAM 15V check	
Measurement Point	Pin ㉗ of CN901
Specified Value	15 ± 0.3 Vdc
CAM –8.5V check	
Measurement Point	Pin ㉛ of CN901
Specified Value	$-8.5^{+0.25}_{-0.4}$ Vdc
MT 5V check	
Measurement Point	Pins ⑨, ⑱ and ⑲ of CN901
Specified Value	5.0 ± 0.1 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "3-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 90

Input method:

1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	06, 07, 08, 09, 0A

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

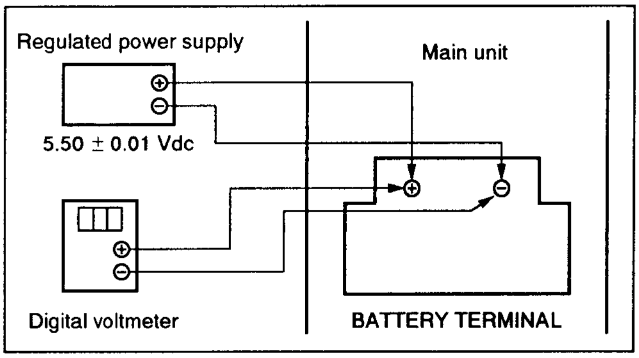


Fig. 6-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
5) Select page: 2, address: 49, read the adjusting remote commander display data, and this data is named D_6.
6) Set data D_6 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D_6 to decimal notation, and obtain D_6'. (Refer to Table 6-1-3. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D_7', D_8', D_9' and D_A' using following equations (decimal notation calculation).
   $D_7'=D_6'+3$
   $D_8'=D_6'+8$
   $D_9'=D_6'+14$
   $D_A'=D_6'+18$
9) Convert D_7', D_8', D_9' and D_A' to hexadecimal notation, and obtain D_7, D_8, D_9 and D_A.
10) Set data: D_7' to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D_8' to page: D, address: 08, and press the PAUSE button.
12) Set data: D_9' to page: D, address: 09, and press the PAUSE button.
13) Set data: D_A to page: D, address: 0A, and press the PAUSE button.
14) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

Checking method:

Remove the adjusting remote commander, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
4) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
5) Check that the 🔋 mark on the EVF display and the TALLY lamp blinks every second.
6) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
7) Check that the 🔋 mark on the EVF display and the TALLY lamp are blinking faster.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-124 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN102 (RF SWP) CH2: Pin ③ of CN102 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04, 05
Specified Value	t=0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 0B to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t". (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.

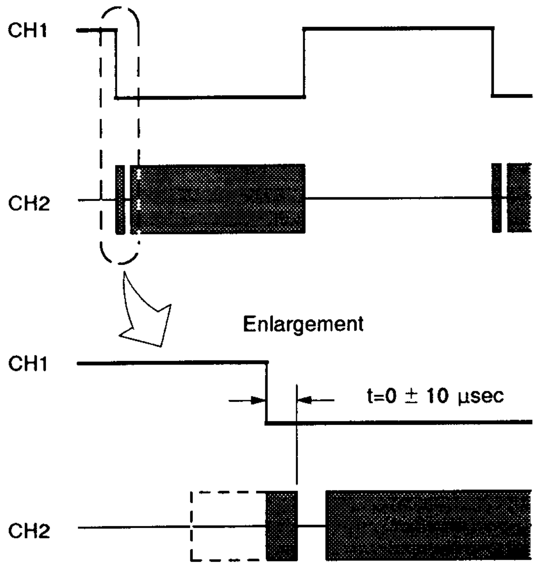


Fig. 6-3-6.

3-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) DE EMPH level adjustment
8) PB Y out level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis adjustment 1
12) Chroma emphasis adjustment 2
13) Comb filter fine adjustment
14) REC Y level adjustment
15) REC L adjustment
16) REC CHROMA level adjustment
17) REC ATF level check

1. Playback Frequency Characteristic Adjustment (VS-124 board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [−]
Adjustment Page	D
Adjustment Address	5E, [63]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.2)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of Page: D, address: 05, set data: 1A.
3) Press the PAUSE button of the adjusting remote commander.
4) Change the data of address: 5E [63] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
5) Set the data memorized step 2) to Page: D, address: 05, and press the PAUSE button of the adjusting remote commander.

Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.

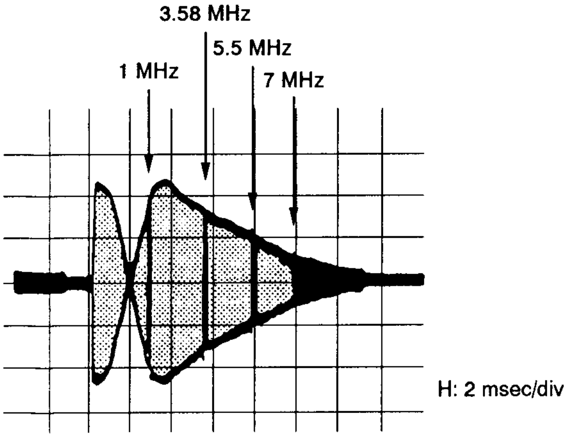


Fig. 6-3-7.

2. Flying Erase Check (VS-124 board)

Mode	Camera record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

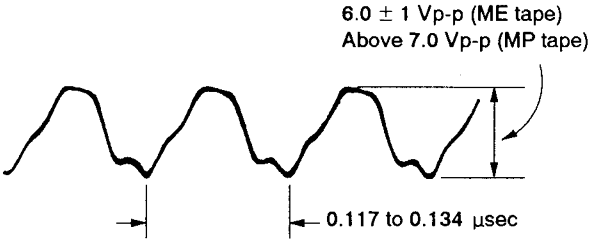


Fig. 6-3-8.

3. VXO Oscillation Frequency Check (VS-124 board)

Mode	Playback
Signal	Color bar
Measurement Point	Pin (61) of IC201 (CL227)
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin (61) of IC201 is 4433619 ± 50 Hz.

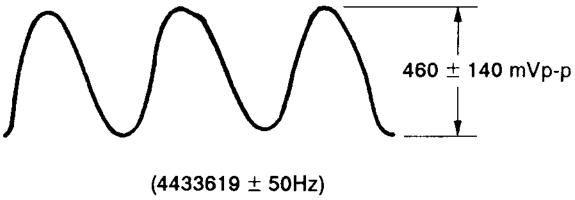


Fig. 6-3-9.

4. SYNC AGC Level Adjustment (VS-124 board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

Mode	Camera record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O) Note 2 (CL298)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.00 ± 0.025V

Note 1: The chroma signal input is not required.
Note 2: Terminate the video out terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

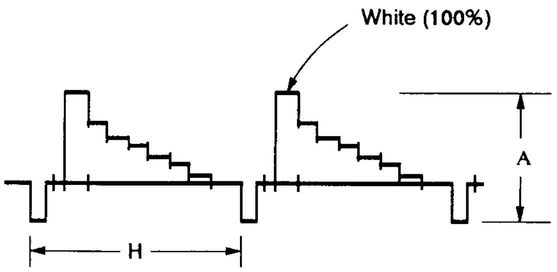
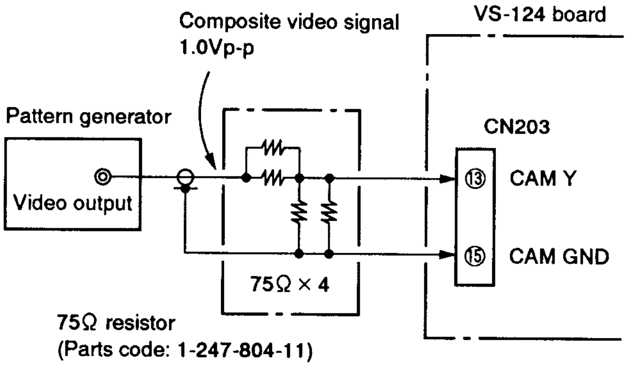


Fig. 6-3-10.

5. Comb Filter Adjustment (VS-124 board)

Mode	Camera record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202 (PHASE)
Adjustment Page	D
Adjustment Address	71
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator of the composite video signal as shown in the following figure.



Adjusting method:
1) Set to the camera record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
6) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
7) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
8) Adjust RV202 so that the residual chroma component becames minimum.
9) Repeat 8) and 9).
10) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

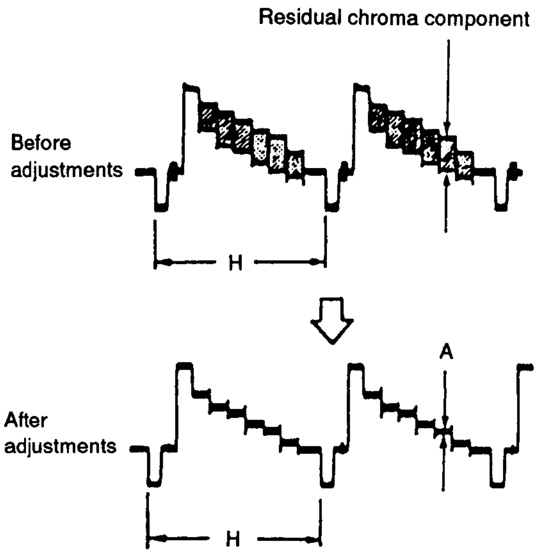

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 6-3-11.

6. Emphasis Input Level Adjustment (VS-124 board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205 (CL204)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

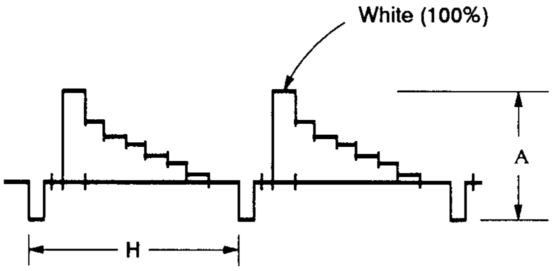

White (100%)
A
H

Fig. 6-3-12.

7. DE EMPH Level Adjustment (VS-124 board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section (WR5-5CSP)
Measurement Point	Pin ㉓ of IC201 (DL IN 1) (CL215)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	87
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Perform "PB Y OUT Level Adjustment".

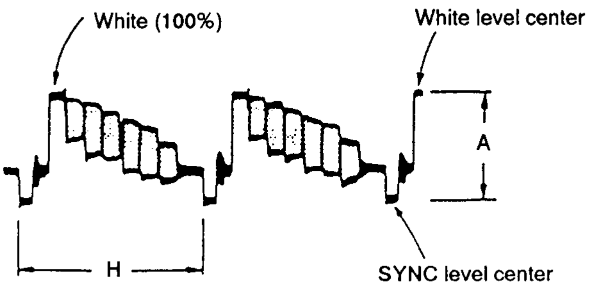


Fig. 6-3-13.

8. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.045 ± 0.05V

Note 1: Terminate the video out terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Note 2: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

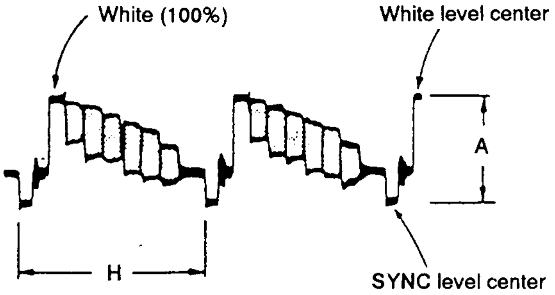


Fig. 6-3-14.

9. Y FM Carrier Frequency Adjustment (VS-124 board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (CL294)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.39 ± 0.01 MHz

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

4.39 ± 0.01 MHz

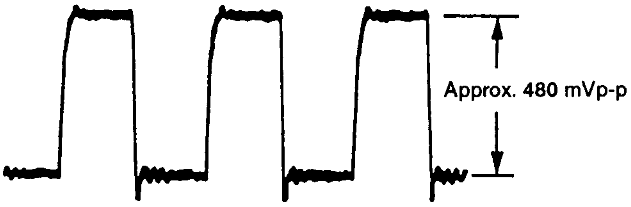


Fig. 6-3-15.

10. Y FM Deviation Adjustment (VS-124 board)

FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㉓ of IC201 (DL IN 1) (CL215)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote commander.
7) Perform "Y FM Carrier Frequency Adjustment".

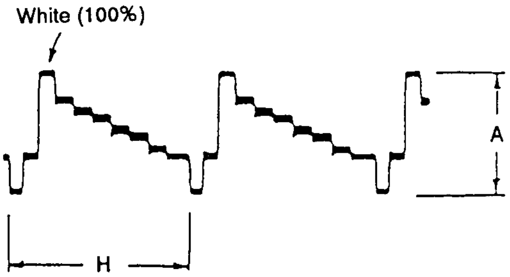


Fig. 6-3-16.

11. Chroma Emphasis Adjustment 1 (VS-124 board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT) (CL216)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum f_0 component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (yellow section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

Minimize the amplitude of the latter section of the yellow section.

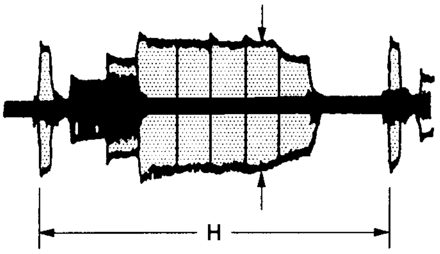


Fig. 6-3-17.

12. Chroma Emphasis Adjustment 2 (VS-124 board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

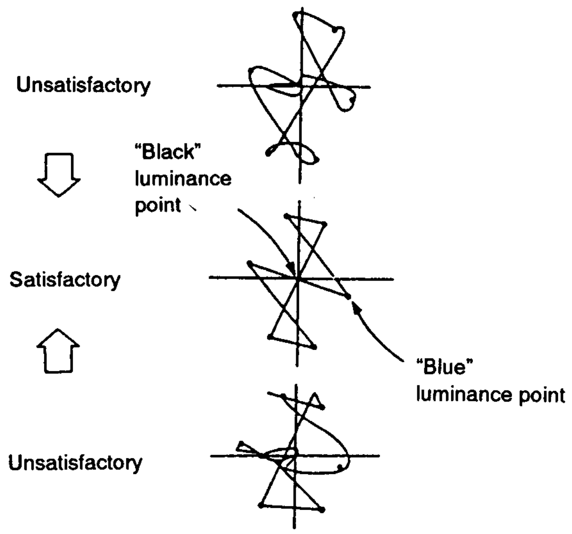


Fig. 6-3-18.

13. Comb Filter Fine Adjustment (VS-124 board)

Set the level and phase of the 2H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV202 (PHASE)
Adjustment Page	D
Adjustment Address	71
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with RV202.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

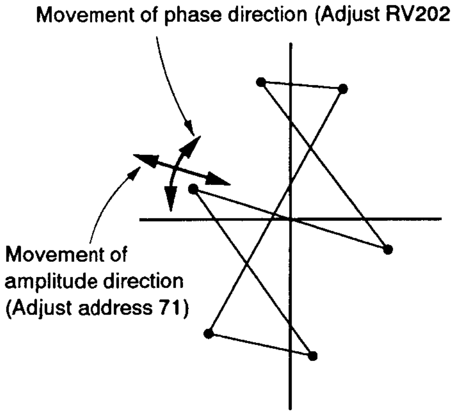

Movement of phase direction (Adjust RV202)
Movement of amplitude direction (Adjust address 71)

Fig. 6-3-19.

14. REC Y Level Adjustment (VS-124 board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Camera record
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	42, 43, 46, 47
Specified Value	A=130 ± 5 mVp-p

Note: Use a normal MP type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: FF to address: 43 of page: D, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data to address: 42, 43, 46 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	**Data**
42	Same data as address: 47
43	Same data as address: 47
46	Same data as address: 47

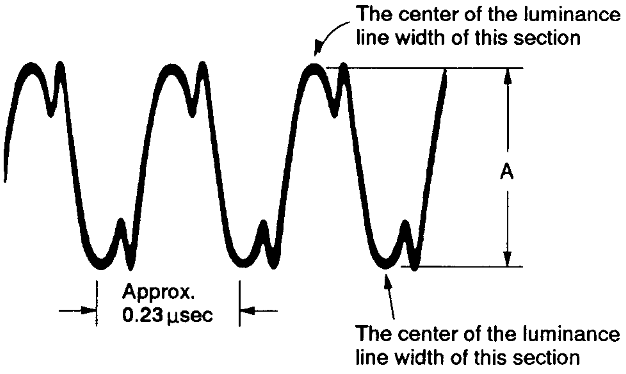

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 6-3-20.

15. REC L Adjustment (VS-124 board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Camera record
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38, 39, 3A, 3B
Specified Value	A=8.0 ± 1.0 mVp-p

Note 1: Use a MP type tape.

Note 2: AU-183 board is required for this adjustment.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: FF to address: 39 of page: D, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Read the data of page: D, address: 3B, and this data is named D3B.
6) Set data: D3B to address: 39 of page D.
7) Press the PAUSE button of the adjusting remote commander.
8) Convert D3B to decimal notation, and obtain D3B′.
   (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
9) Culculate D3A′ using following equation (decimal notation calculation).
   D3A′=D3B′−7
10) Convert D3A′ to hexadecimal notation, and obtain D3A.
11) Set data: D3A to address: 3A of page D.
12) Press the PAUSE button of the adjusting remote commander.
13) Set data: D3A to address: 38 of page D.
14) Press the PAUSE button of the adjusting remote commander.
15) Perform "REC CHROMA Level Adjustment".

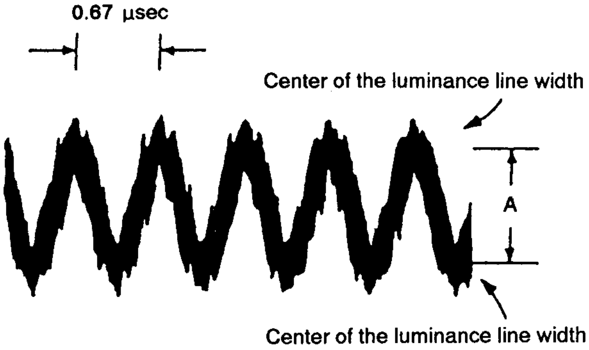

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-21.

16. REC CHROMA Level Adjustment (VS-124 board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Camera record (SP)
Signal	Color bar (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	33, 32, 37, 36
Specified Value	A=26 ± 3 mVp-p

Note 1: Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (1-101-004-00)
3) Disconnect AU-183 board.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 33, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 33, and this data is named D33.
5) Set data: D33 to address: 32 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D33 to address: 36 of page D.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: D33 to address: 37 of page D.
10) Press the PAUSE button of the adjusting remote commander.

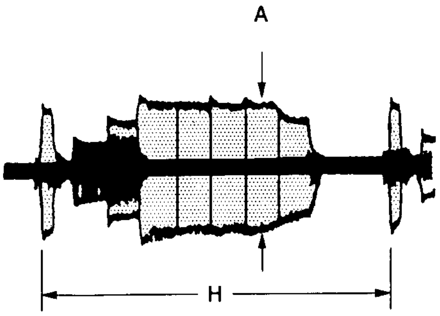


Fig. 6-3-22.

17. REC ATF Level Check (VS-124 board)

Mode	Camera record (SP)
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=7.0 ± 1.5 mVp-p

Note 1: Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Disconnect AU-183 board.

Adjusting method:

1) Check that the REC ATF signal level (A) satisfise the specified value.

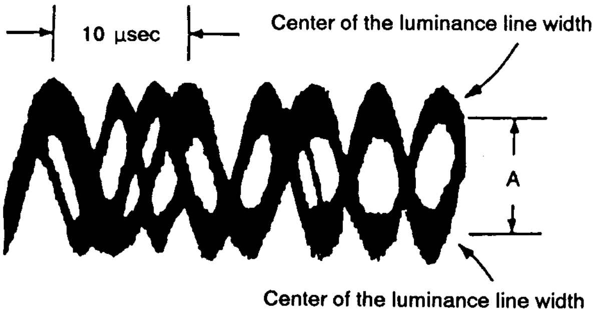
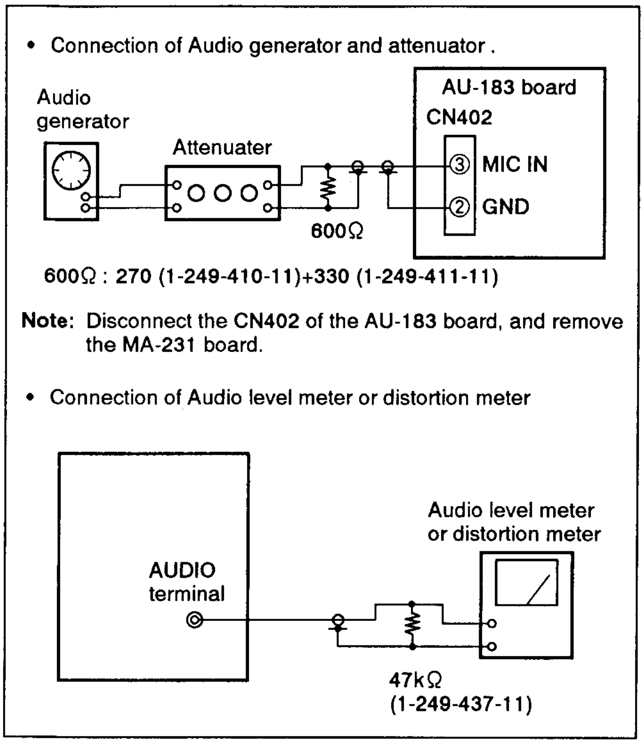

10 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-23.

3-6. AUDIO SYSTEM ADJUSTMENT

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments as shown in Fig. 6-3-24, and perform adjustments.



- Connection of Audio generator and attenuator.

600Ω : 270 (1-249-410-11)+330 (1-249-411-11)

Note: Disconnect the CN402 of the AU-183 board, and remove the MA-231 board.

- Connection of Audio level meter or distortion meter

Fig. 6-3-24.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Carrier level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-183 board)

Mode	Camera recording
Signal	400 Hz, –38.5 dBs, Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment

Adjust to the optimum audio BPF characteristics of the IC.
If the characteristics is not correct, the distortion rate and S/N ratio will worsen.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Adjustment Page	D
Adjustment Address	8E
Specified Value	Minimum distortion

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 8E and adjust so that the distortion is minimum.
3) Press the PAUSE button of the adjusting remote commander.

3. Deviation Adjustment

Adjust to the optimum audio FM signal deviation.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8F
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 8F, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

4. Carrier Frequency Check (AU-183 board)

Mode	Camera recording
Signal	No signal
Measurement Point	Pin ⑨ of CN401 (REC AFM RF) (CL412)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Carrier Level Check (AU-183 board)

Mode	Camera recording
Signal	No signal
Measurement Point	Pin ⑨ of CN401 (REC AFM RF) (CL412)
Measuring Instrument	Oscilloscope
Specified Value	A=340 ± 40 mVp-p

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.

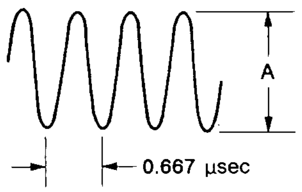


Fig. 6-3-25.

6. Overall Level Characteristic, Distortion Check (AU-183 board)

Mode	Camera recording/playback
Signal	400 Hz, –38.5 dBs, Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.8% (Note 1)

Note: 1) Value when the following filter is used

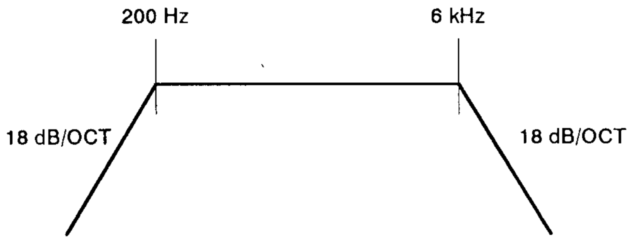


Fig. 6-3-26.

Checking method:

1) Input the 400 Hz, –38.5 dBs signal to Pin ③ of CN402.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.8% (Note 1).

7. Overall Noise Level Check (AU-183 board)

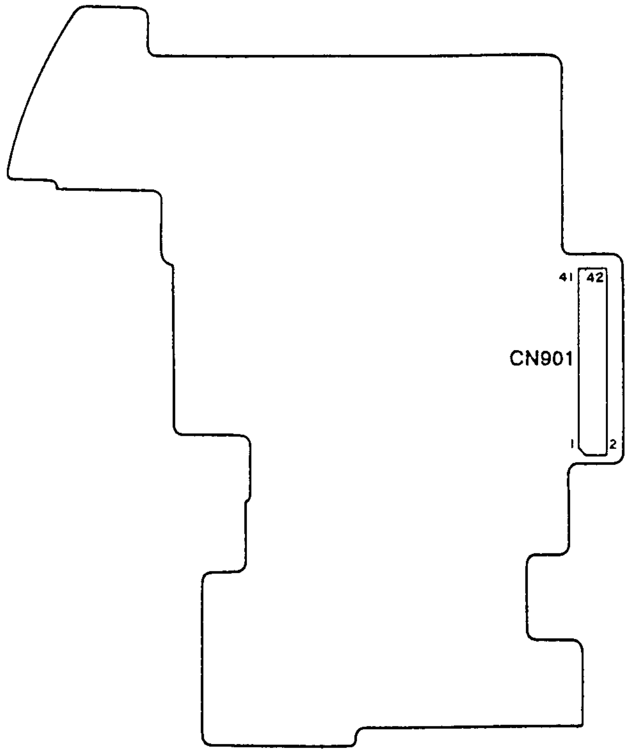
Mode	Camera recording
Signal	No signal: Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –50 dBs

Checking method:

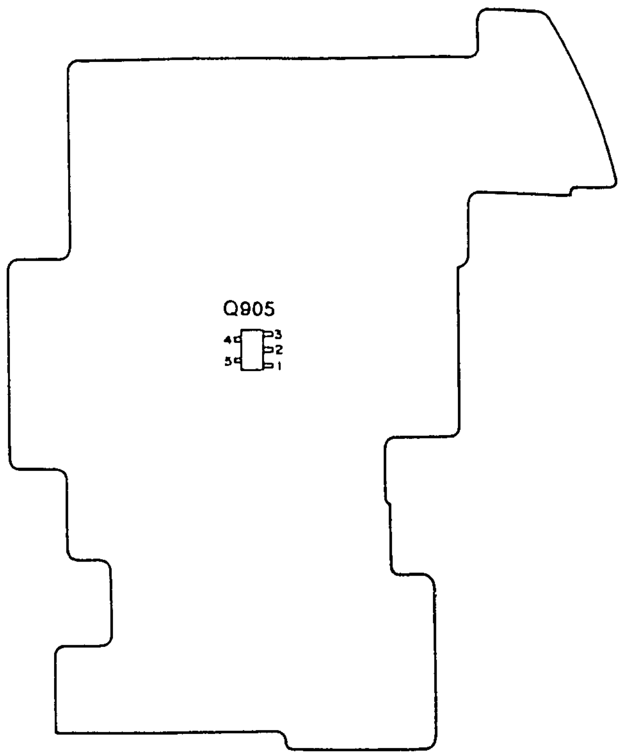
1) Connect Pin ③ of CN402 (MIC IN) and Pin ② of CN402 (GND) with a jumper wire.
2) Record.
3) Remove the jumper wire.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal is below –50 dBs.

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

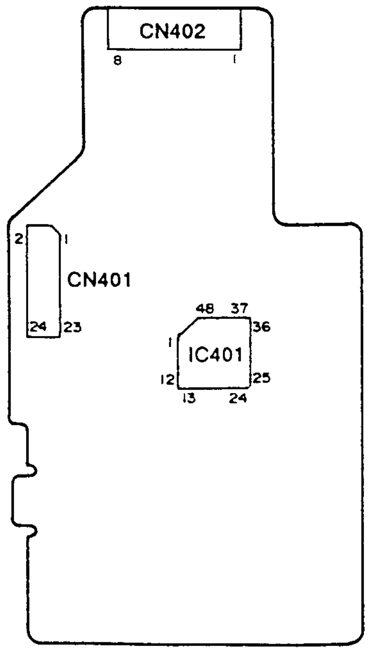
DD-77 BOARD (COMPONENT SIDE)



DD-77 BOARD (CONDUCTOR SIDE)

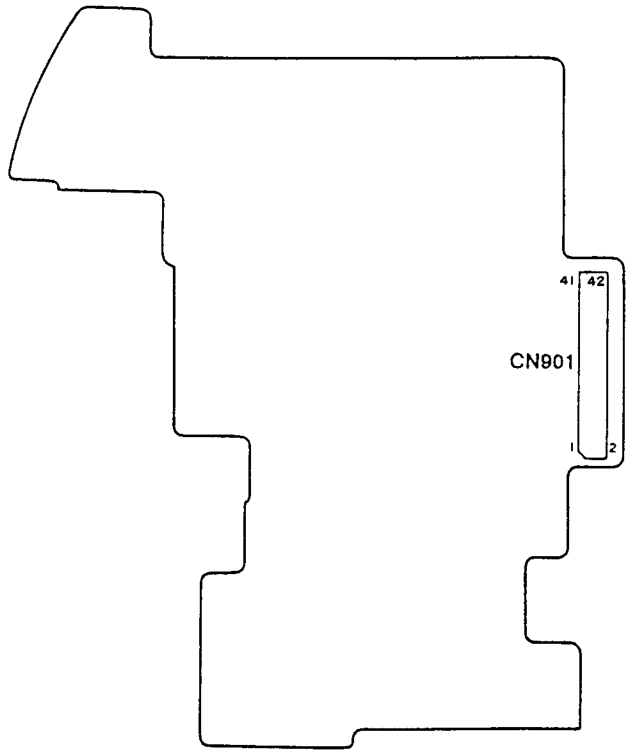


AU-183 BOARD (COMPONENT SIDE)

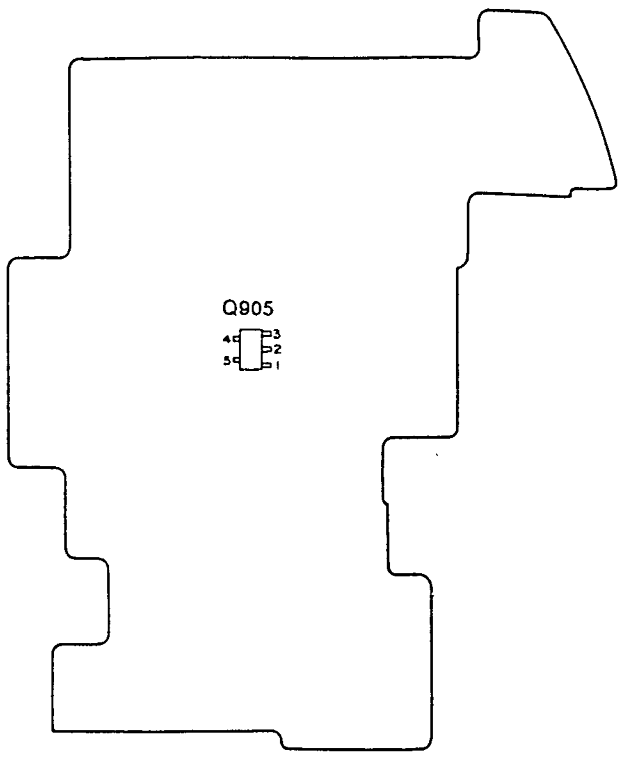


3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

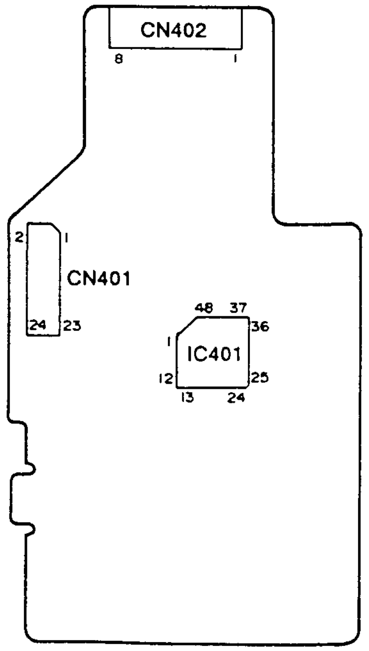
DD-77 BOARD (COMPONENT SIDE)


CN901
41
42
1
2

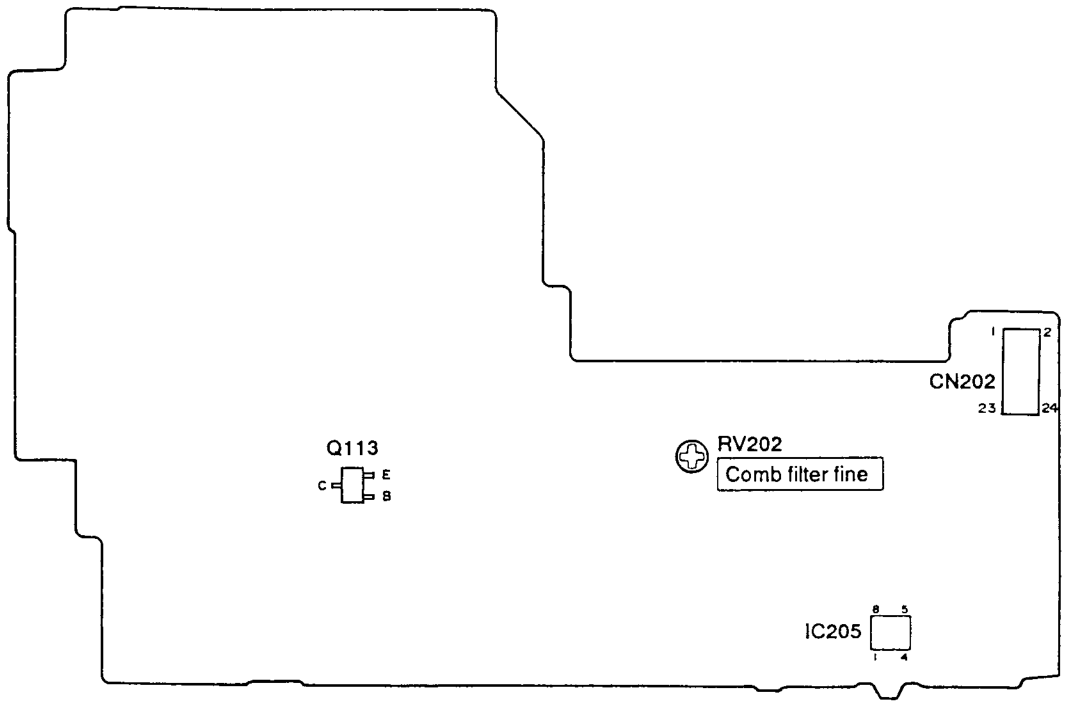
DD-77 BOARD (CONDUCTOR SIDE)



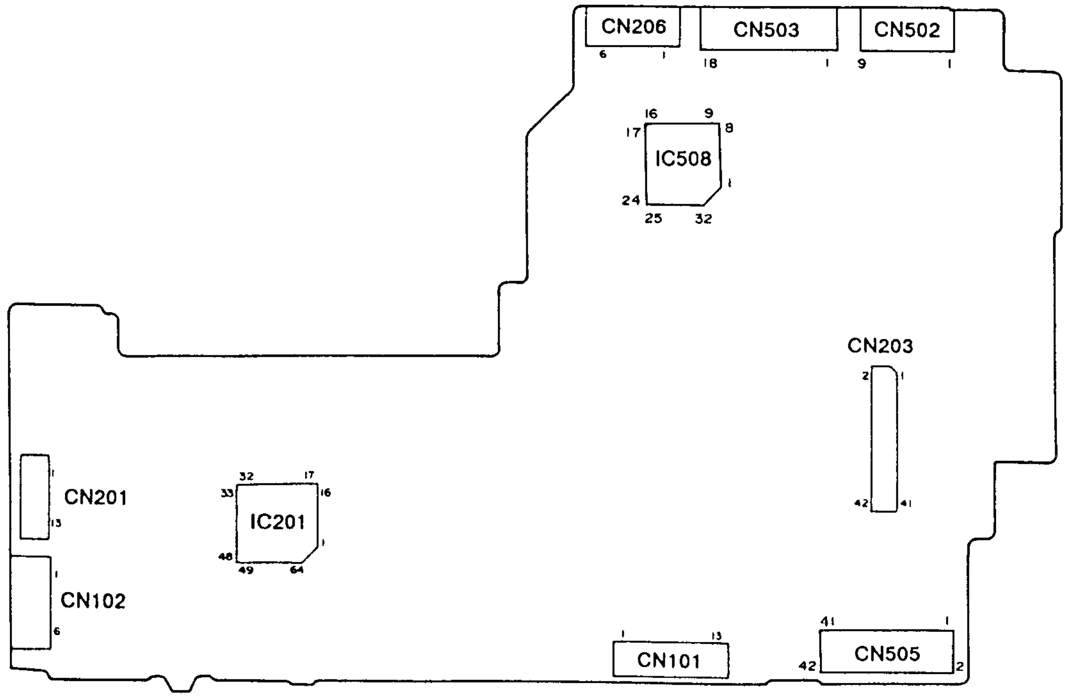
AU-183 BOARD (COMPONENT SIDE)


CN402
8
1
CN401
2
1
24
23
IC401
48
37
36
1
12
25
13
24

VS-124 BOARD (COMPONENT SIDE)


CN202
1
2
23
24
Q113
C
E
B
RV202
Comb filter fine
IC205
8
5
1
4

VS-124 BOARD (CONDUCTOR SIDE)


CN206
6
1
CN503
18
1
CN502
9
1
IC508
16
9
17
8
24
1
25
32
CN203
2
1
42
41
CN201
1
13
IC201
32
17
33
16
48
1
49
64
CN102
1
6
CN101
1
13
CN505
41
1
42
2

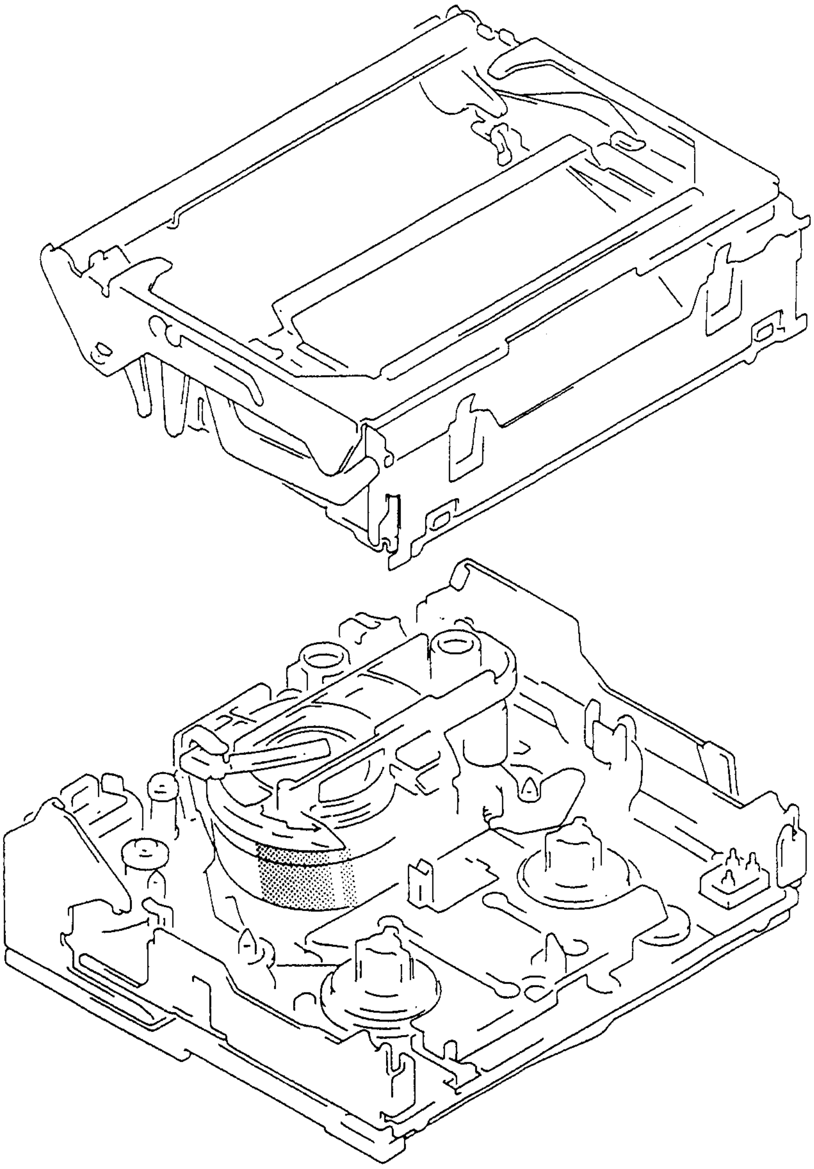
8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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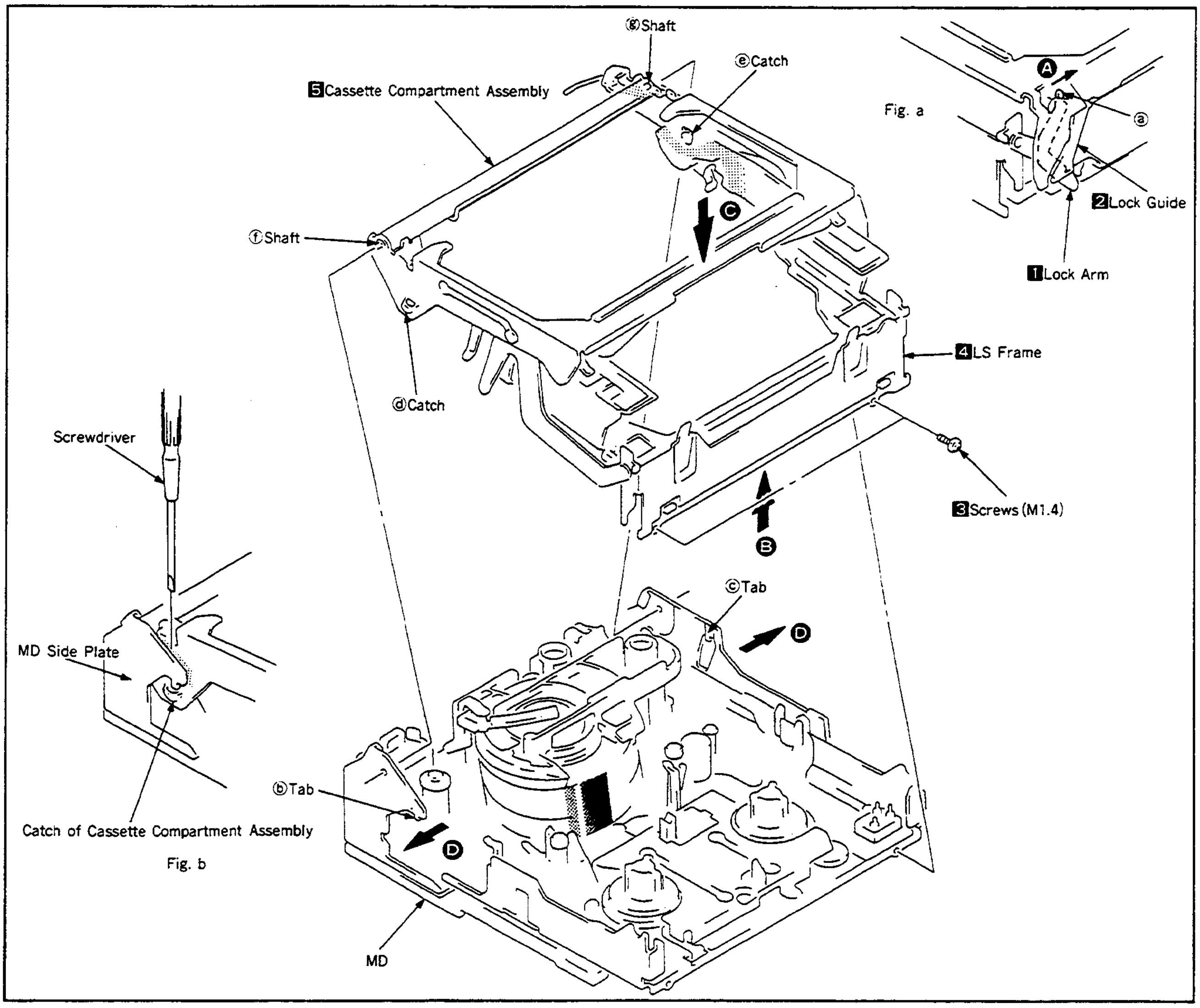
1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow 🅐 to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow 🅑.
4) With the cassette compartment assembly ❺ pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.



ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
🅐
ⓐ
❷Lock Guide
❶Lock Arm
🅒
ⓕShaft
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
🅑
ⓒTab
🅓
MD Side Plate
ⓑTab
🅓
Catch of Cassette Compartment Assembly
Fig. b
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

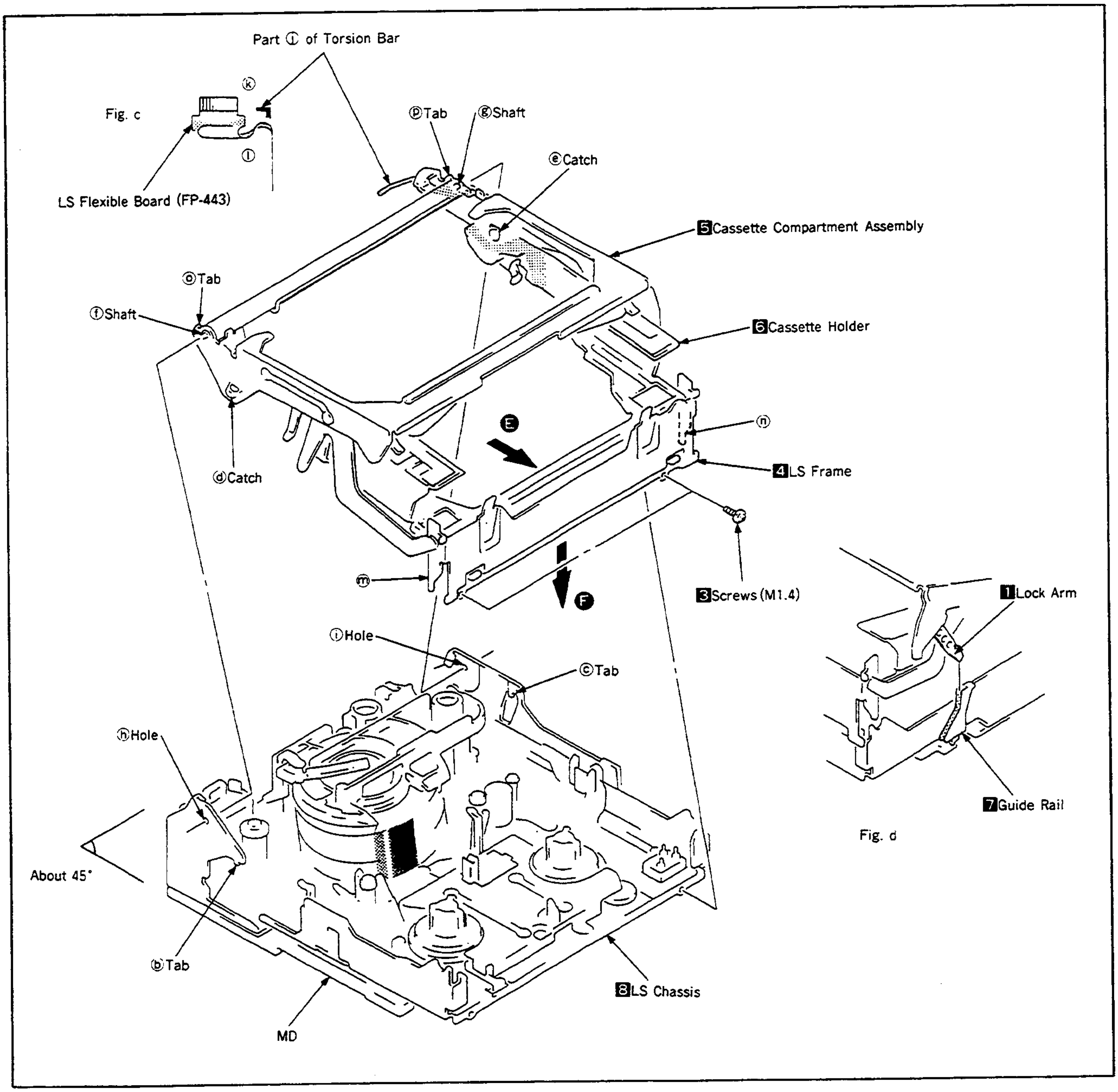

Part ⓙ of Torsion Bar
Fig. c
ⓚ
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
🅔
ⓝ
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
About 45°
ⓑTab
❼Guide Rail
Fig. d
❽LS Chassis
MD

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

Note : Press the asterisked (∗) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

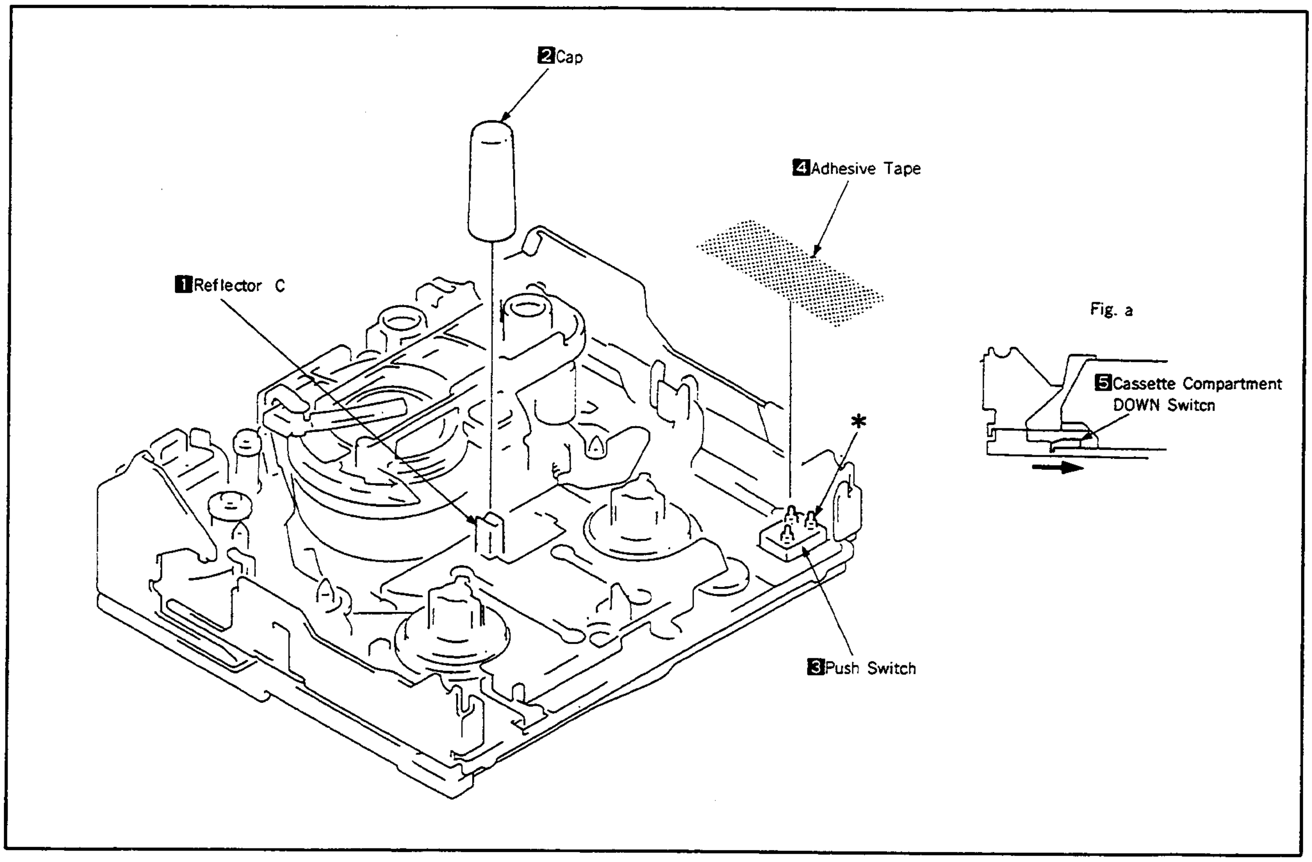

2 Cap
4 Adhesive Tape
1 Reflector C
∗
3 Push Switch
Fig. a
5 Cassette Compartment DOWN Switcn

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

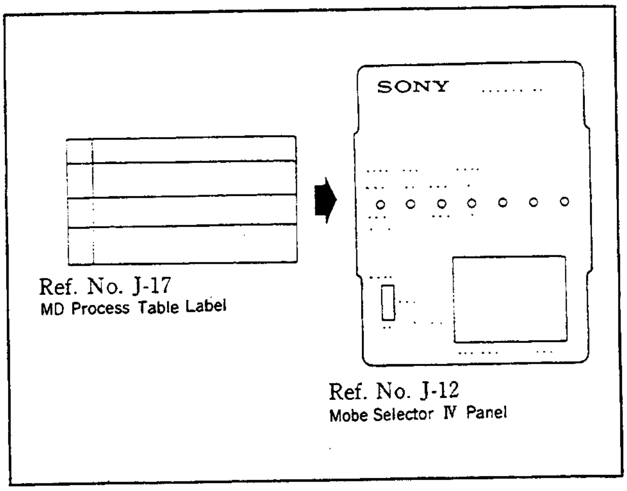

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector IV Panel

Fig. 4

1 Construction (Fig.5)

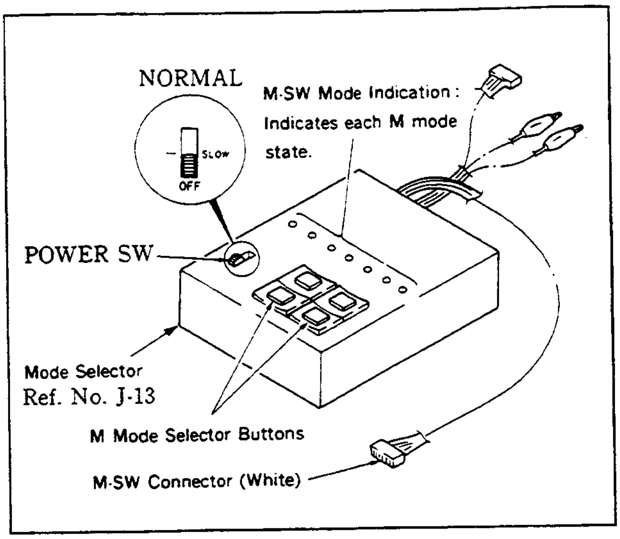

NORMAL
SLOW
OFF
POWER SW
M-SW Mode Indication : Indicates each M mode state.
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

For CCD-FX410 series

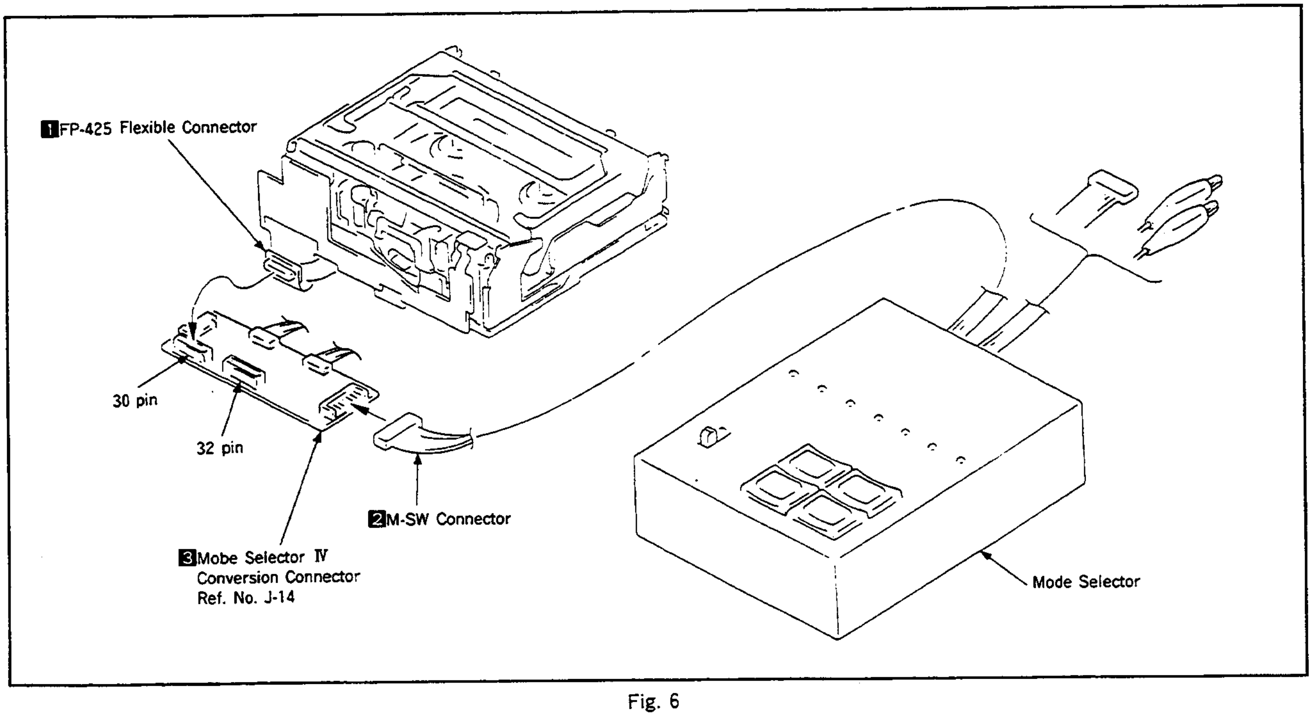
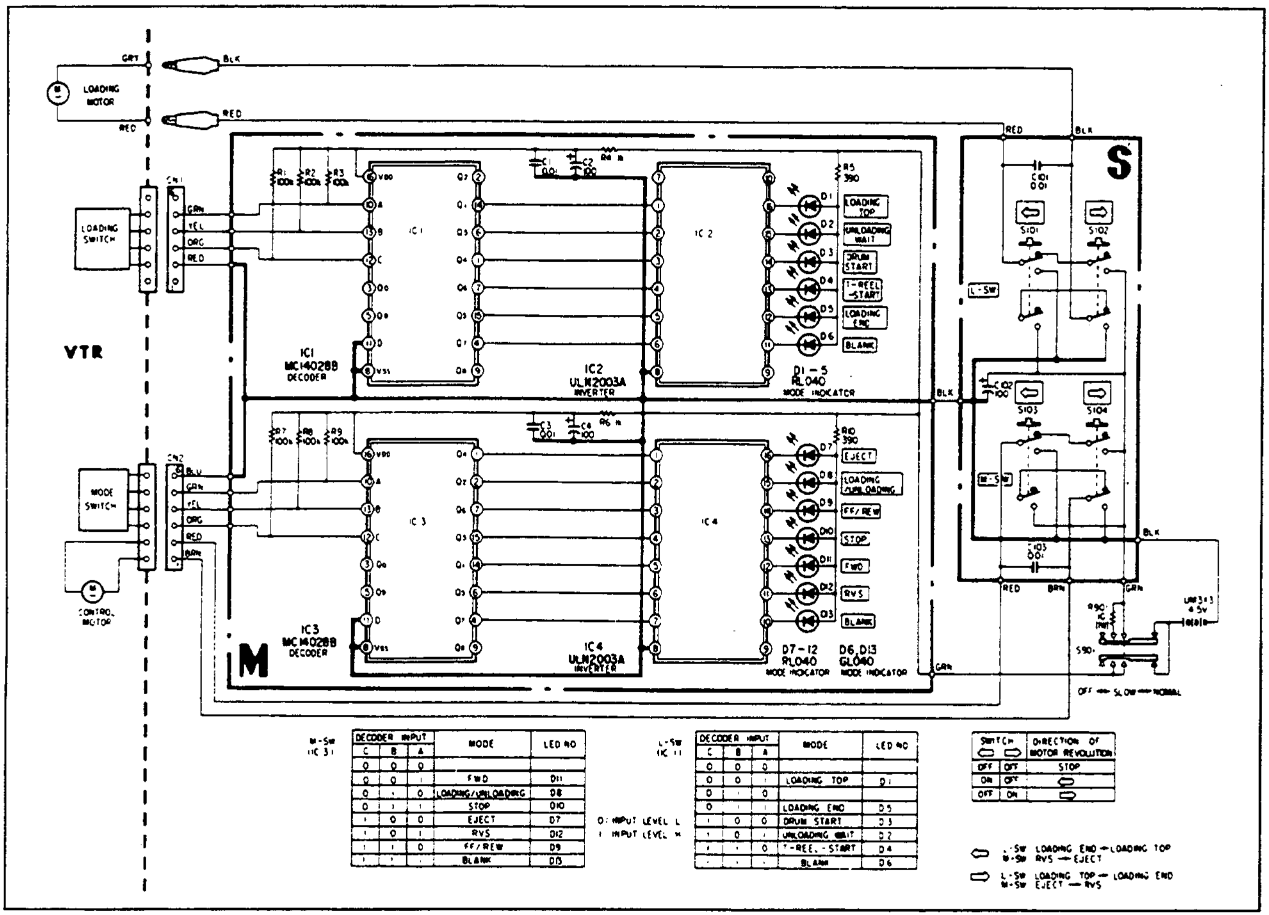

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector IV Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
VTR
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
R5 390
IC1
IC1 MC14028B DECODER
VDD
VSS
IC2
IC2 ULN2003A INVERTER
D1
D2
D3
D4
D5
D6
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
D1-5 RL040 MODE INDICATOR
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
R10 390
IC3
IC3 MC14028B DECODER
IC4
IC4 ULN2003A INVERTER
D7
D8
D9
D10
D11
D12
D13
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7-12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
M
S
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
RED
BRN
GRN
BLK
R901 1Ω
UM3×3 4.5V
S901
OFF ← SLOW ← NORMAL

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL.-START	D4
1	1	1	BLANK	D6

SWITCH ⇦	SWITCH ⇨	DIRECTION OF MOTOR REVOLUTION
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

CAPACITOR

Ref. No	Part No.	Description			
C1	1-108-579-00	MILER	0.01μF	50V	
C2	1-123-333-00	ELECT	100μF	24V	
C3	1-108-579-00	MILER	0.01μF	50V	
C4	1-123-333-00	ELECT	100μF	24V	
C101	1-108-579-00	MILER	0.01μF	50V	
C102	1-123-333-00	ELECT	100μF	24V	
C103	1-108-579-00	MILER	0.01μF	50V	

DIODE

Ref. No	Part No.	Description
D1	8-719-812-31	DIODE TLR123
D2	8-719-812-31	DIODE TLR123
D3	8-719-812-31	DIODE TLR123
D4	8-719-812-31	DIODE TLR123
D5	8-719-812-31	DIODE TLR123
D6	8-719-812-33	DIODE TLG123A
D7	8-719-812-31	DIODE TLR123
D8	8-719-812-31	DIODE TLR123
D9	8-719-812-31	DIODE TLR123
D10	8-719-812-31	DIODE TLR123
D11	8-719-812-31	DIODE TLR123
D12	8-719-812-31	DIODE TLR123
D13	8-719-812-33	DIODE TLG123A

IC

Ref. No	Part No.	Description	
IC1	8-752-240-28	IC	TC4028BP
IC2	8-752-120-03	IC	μPA2003C
IC3	8-759-240-28	IC	TC4028BP
IC4	8-759-120-03	IC	μPA2003C

RESISTOR

Ref. No	Part No.	Description		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

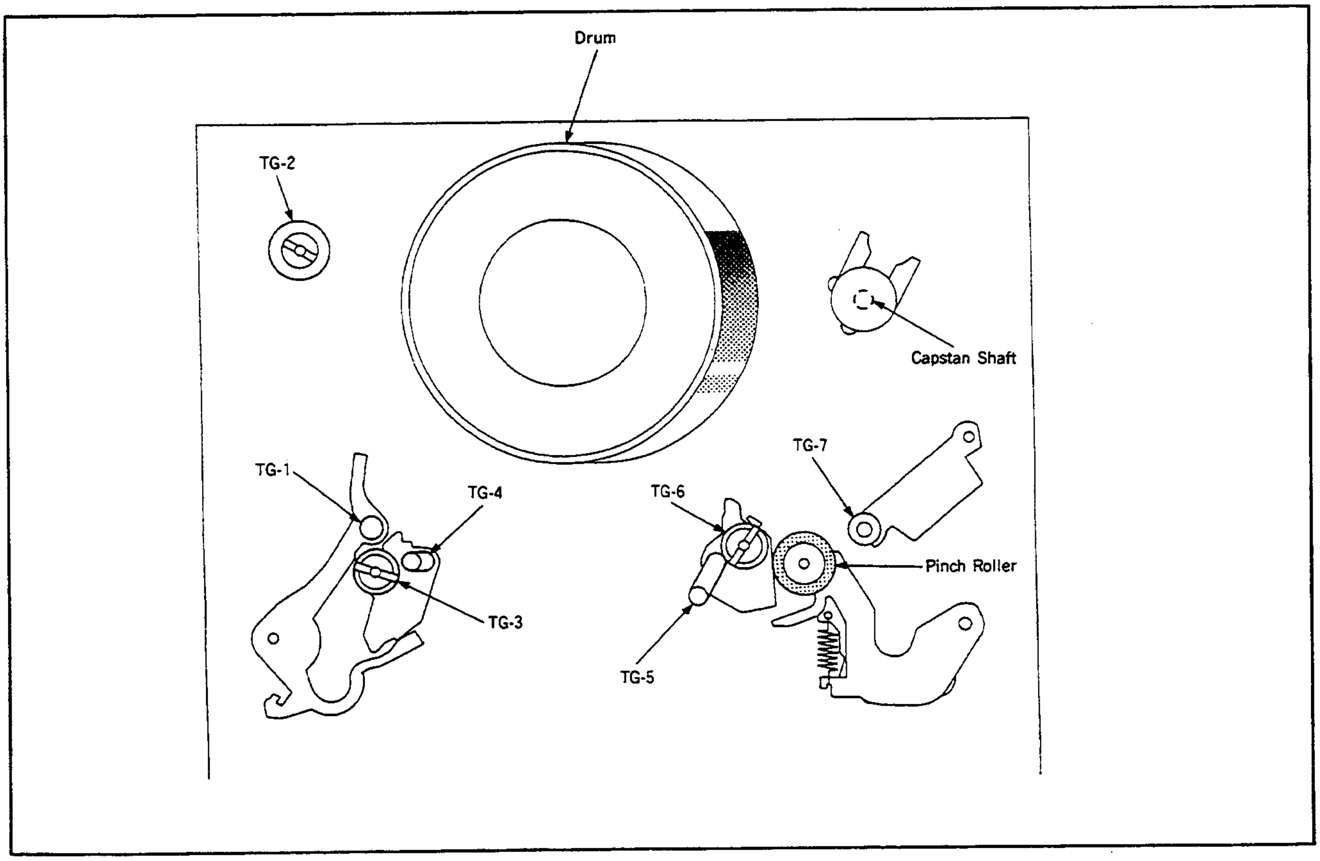


Fig. 7

2-3. PERILDIC CHECK ITEMS

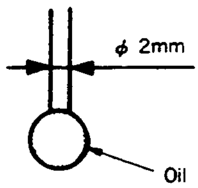
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

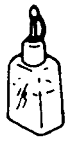


2-4. Service jigs list

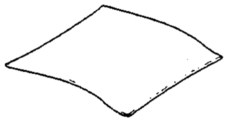
Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

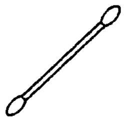
J-1



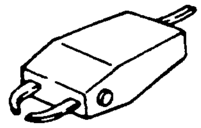
J-2



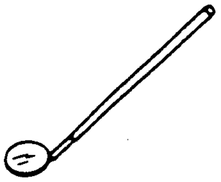
J-3



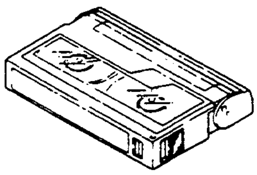
J-4



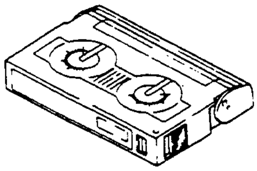
J-5



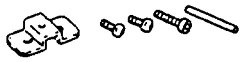
J-6



J-9

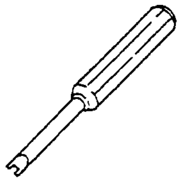


J-10

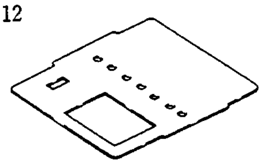


(Attached to the maintenance rotary upper drum)

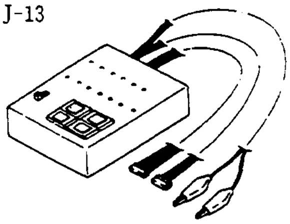
J-11



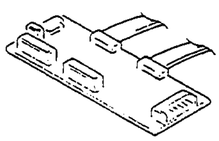
J-12



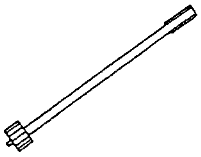
J-13



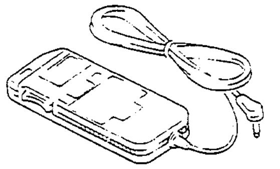
J-14



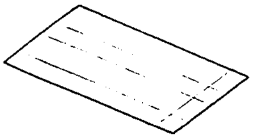
J-15



J-16



J-17



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw **1**.
3) Remove the Retainer, Gooseneck assembly **2**.

2. Mounting

1) Mount the Retainer, Gooseneck assembly **2** with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw **1**.
3) Referring to 1-1, mount the cassette compartment assembly.

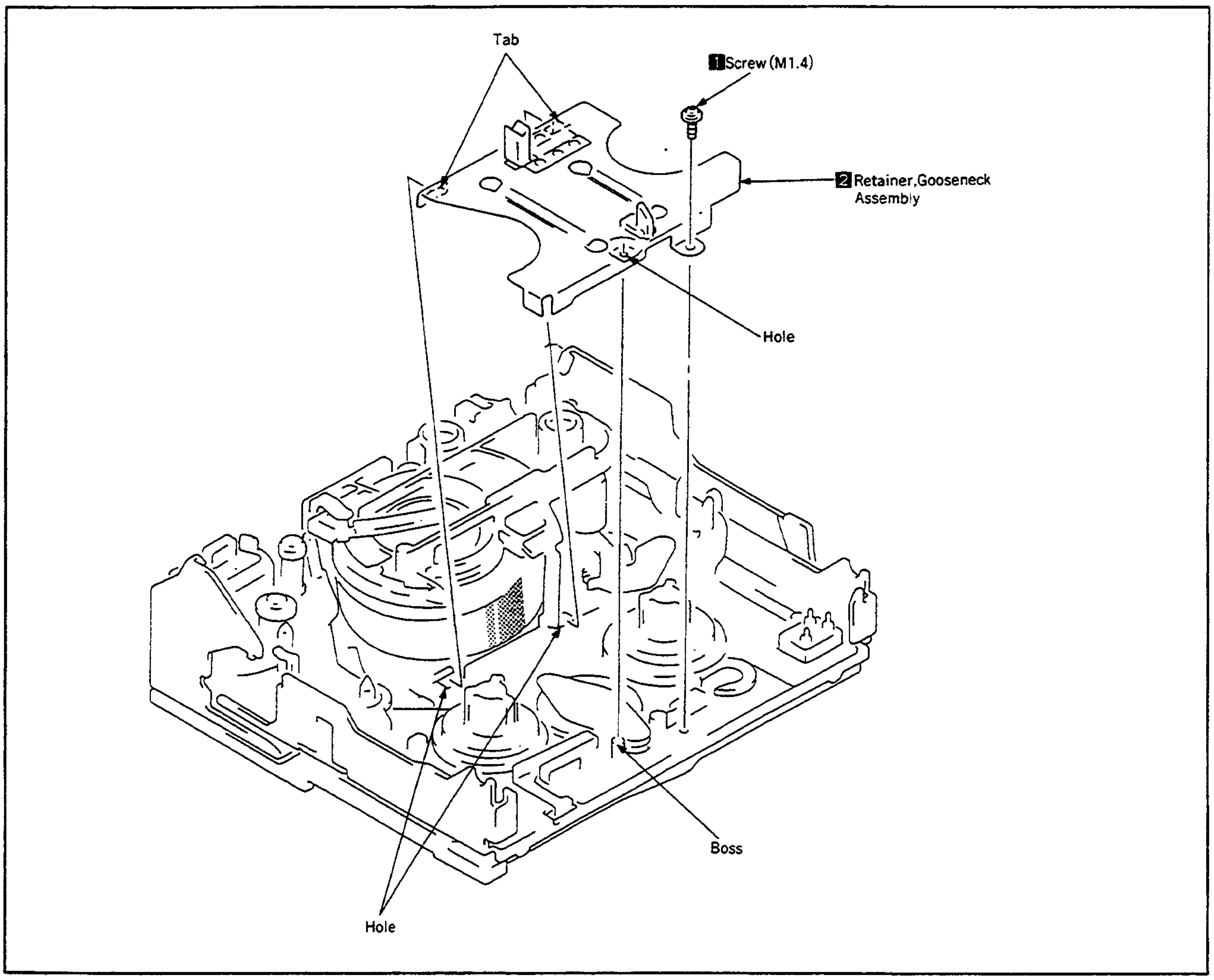


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hol engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

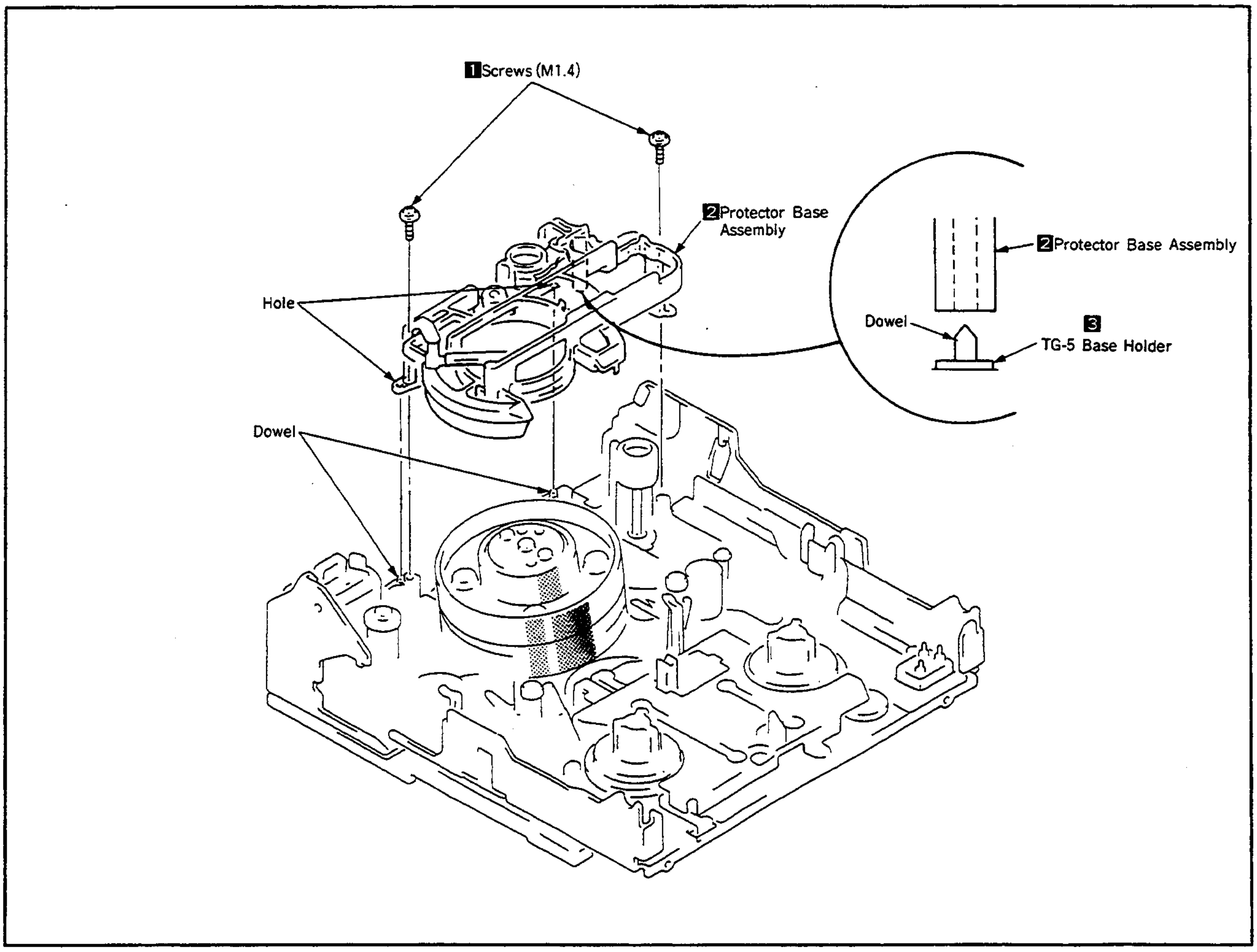

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸
TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ■1 on the back of MD.
4) Remove three screw ■2, then the drum assembly ■3.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly ■3 while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ■2 in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ■1 on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

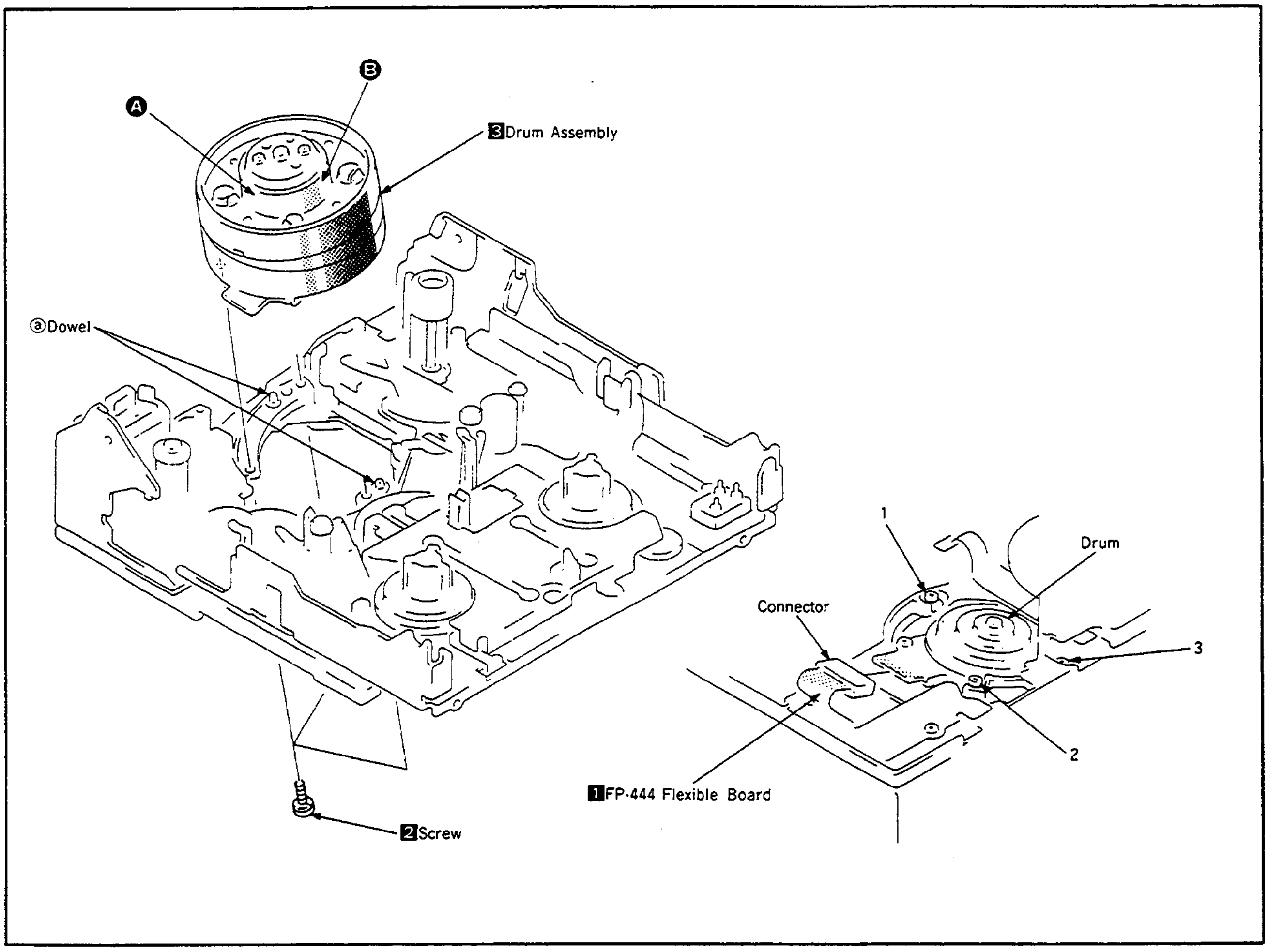


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw ❶, then the capstan cover ❷.
3) Remove the screw ❸, then the capstan motor assembly ❹.

2. Mounting

1) Mount the capstan motor assembly ❹ and tighten the scr ❸.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover ❷ and tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

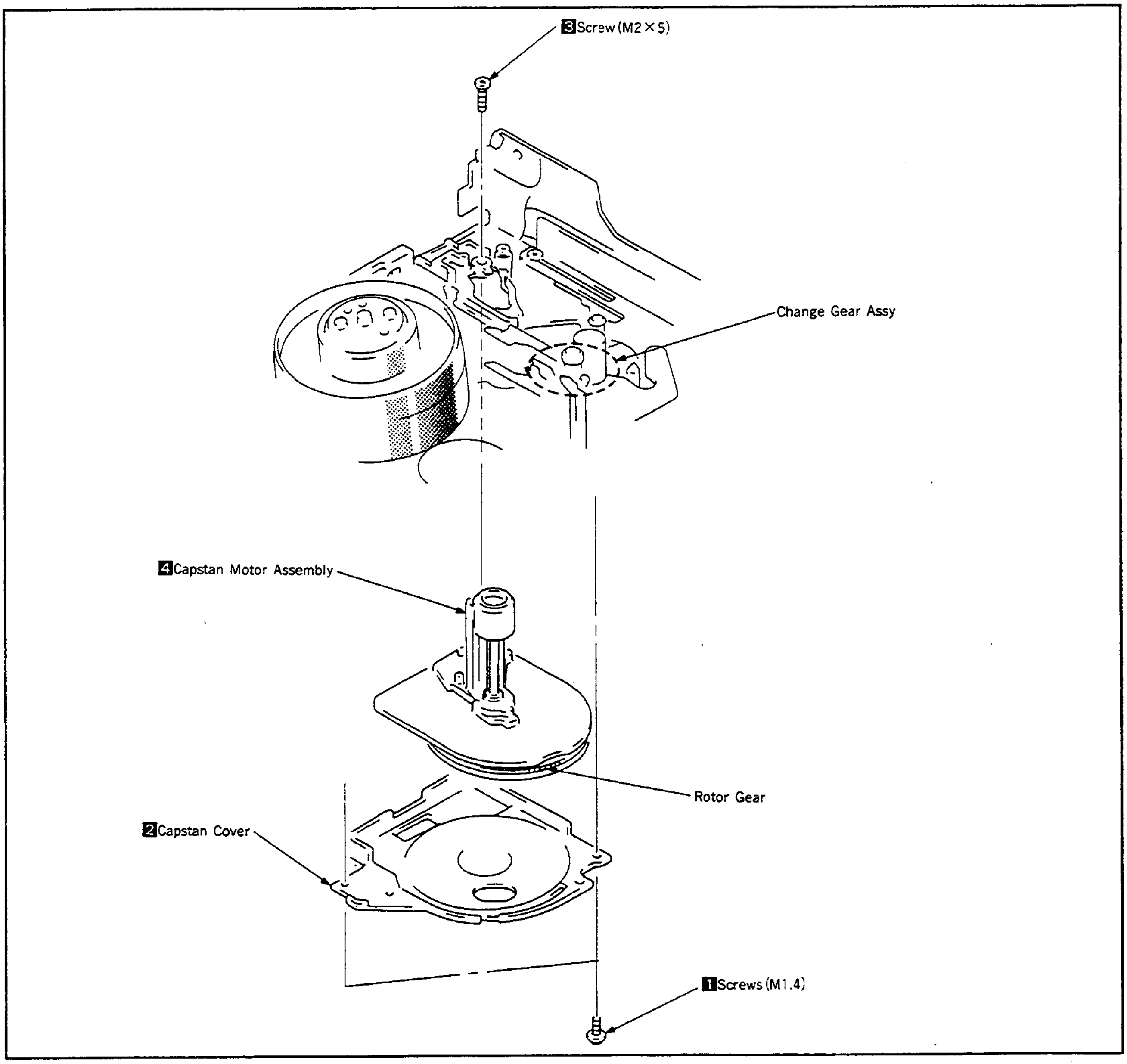

❸Screw (M2 × 5)
Change Gear Assy
❹Capstan Motor Assembly
Rotor Gear
❷Capstan Cover
❶Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly ❶.
4) Remove the T soft assembly ❷, then the T soft arm ❸.

2. Mounting

1) Mount the T soft arm ❸ with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly ❷ with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly ❶ and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

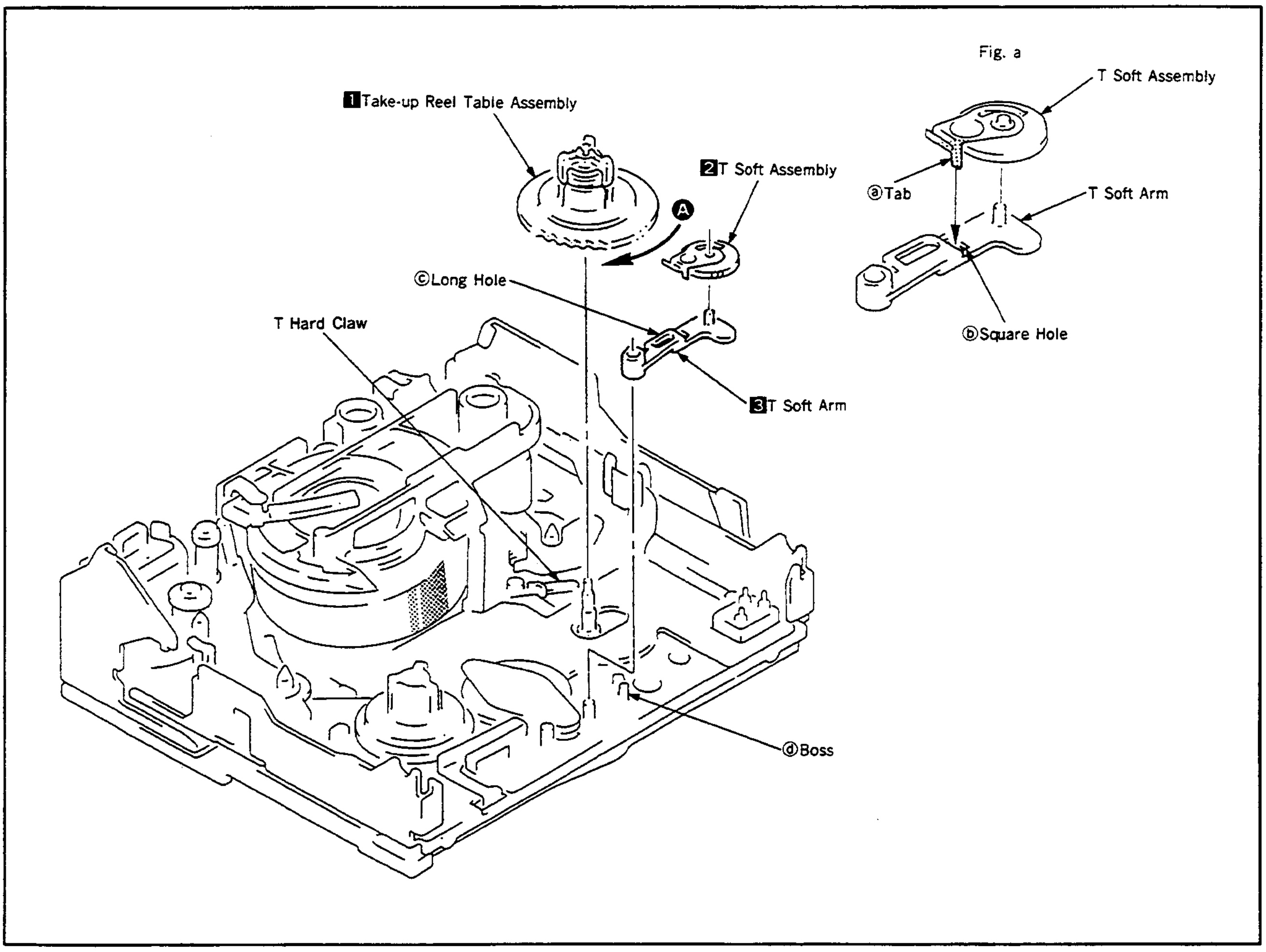

❶Take-up Reel Table Assembly
❷T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
❸T Soft Arm
ⓓBoss
Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole

Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the $\boxed{\text{READY}}$ mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the $\boxed{\text{READY}}$ mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

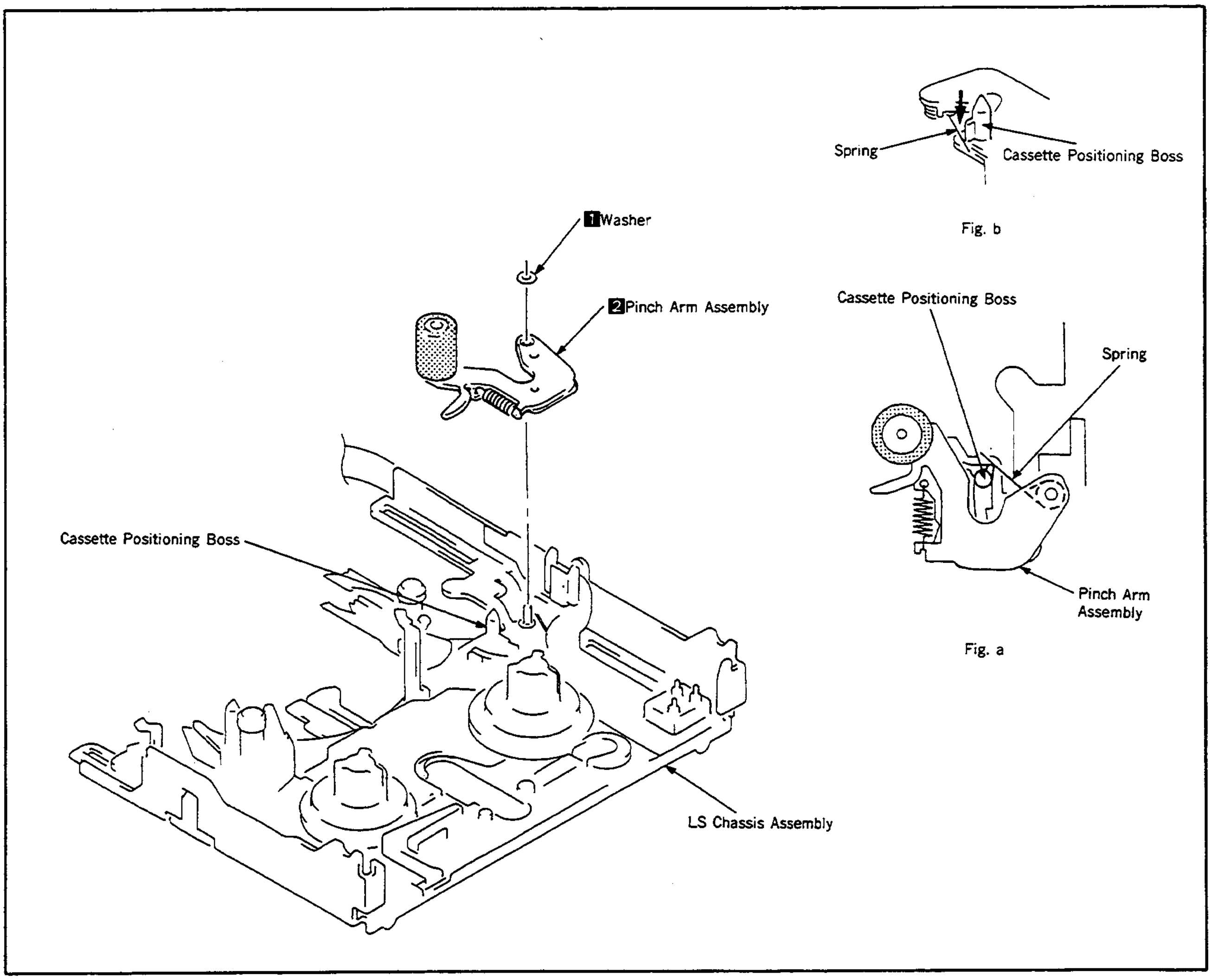

Spring
Cassette Positioning Boss
Fig. b
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Pinch Arm Assembly
Fig. a
Cassette Positioning Boss
LS Chassis Assembly

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck as sembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

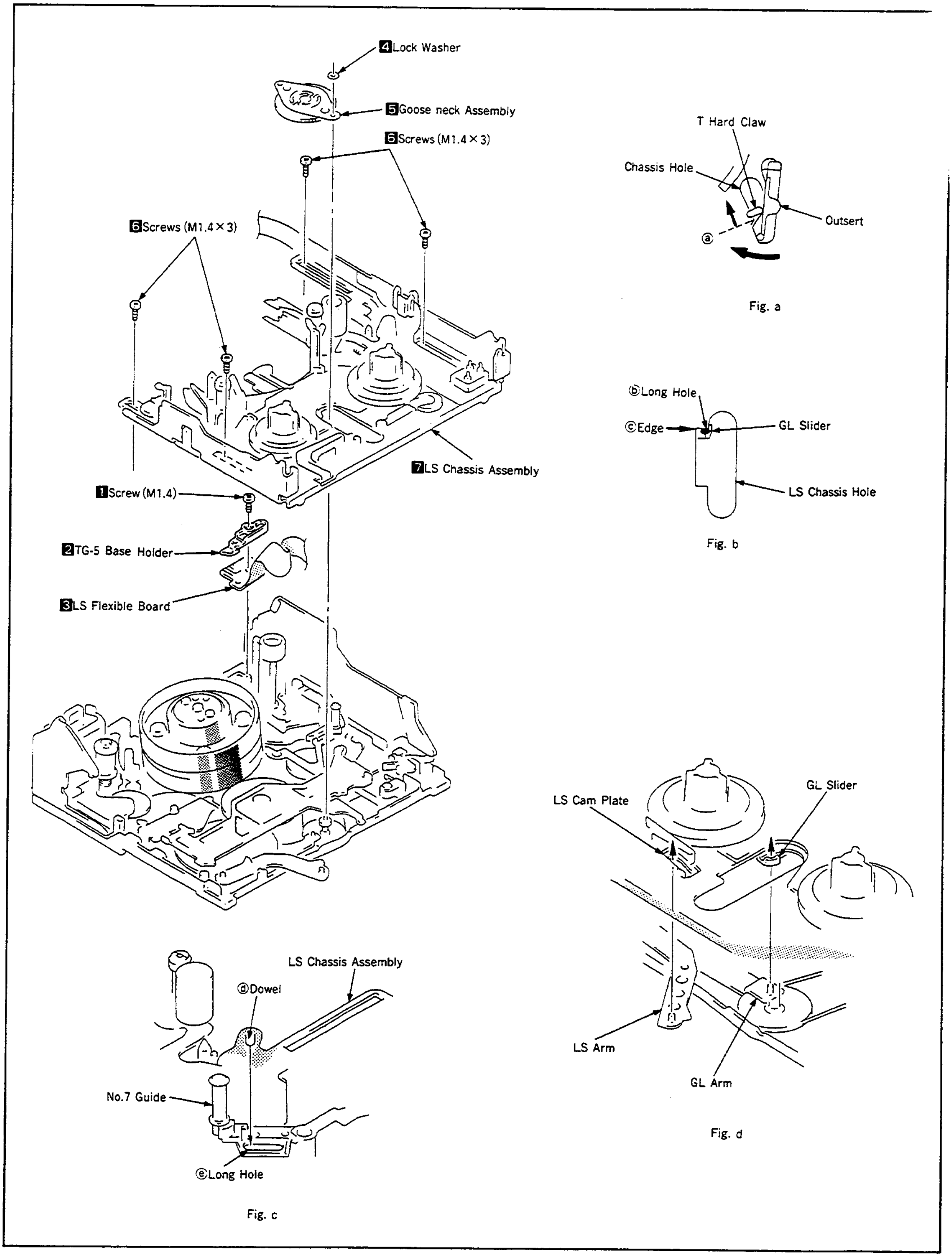

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4 × 3)
6 Screws (M1.4 × 3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑLong Hole
ⓒEdge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓDowel
No.7 Guide
ⓔLong Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

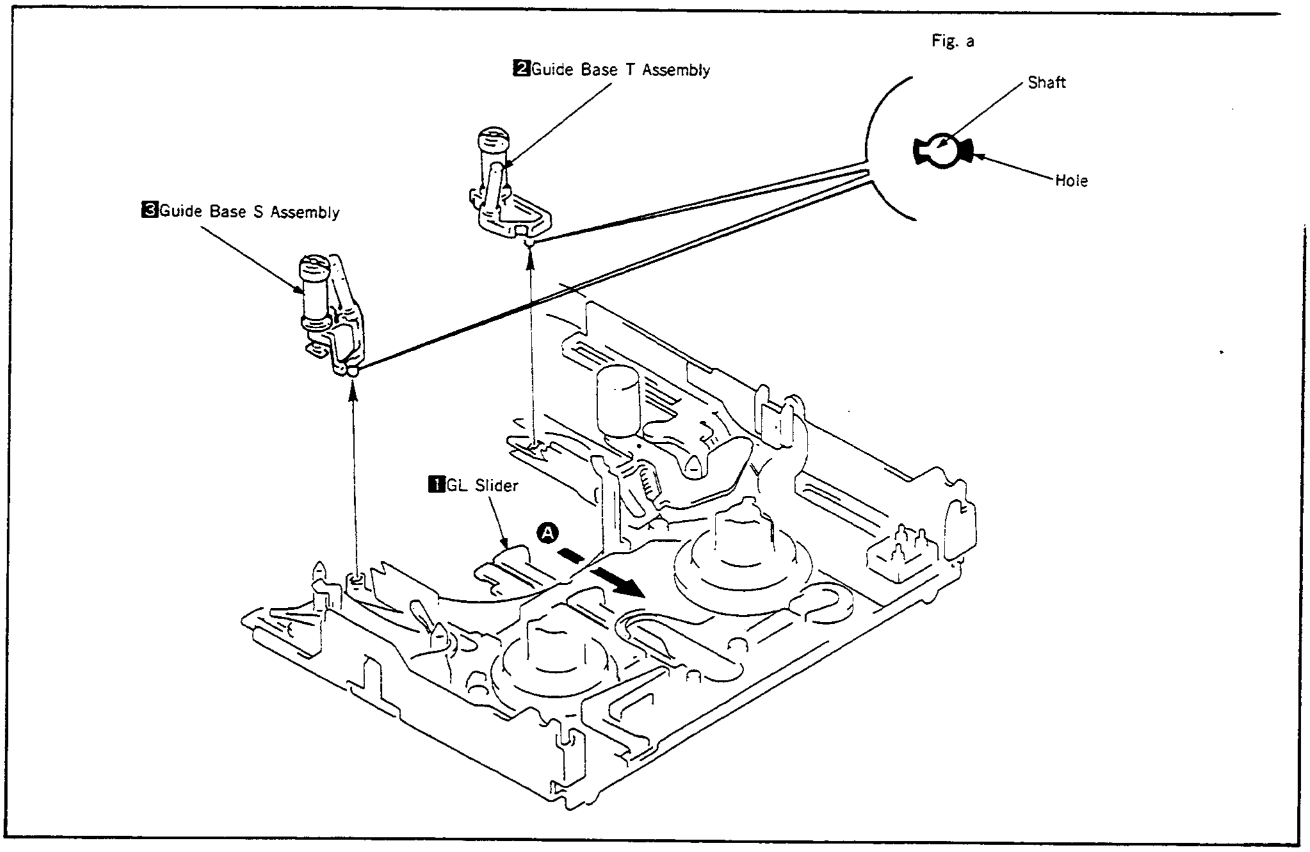


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
Ⓐ

Fig. 15

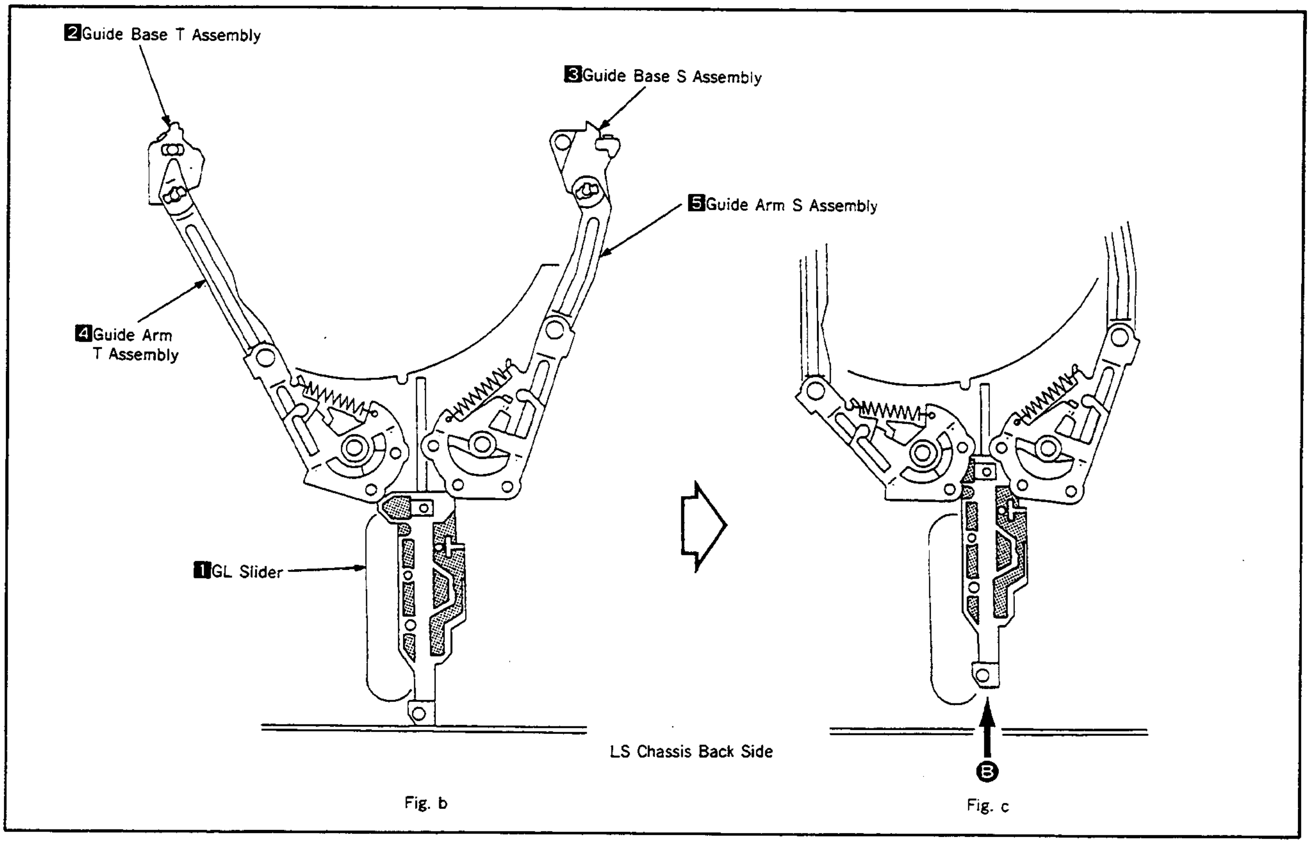

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
Ⓑ

Fig. b

Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

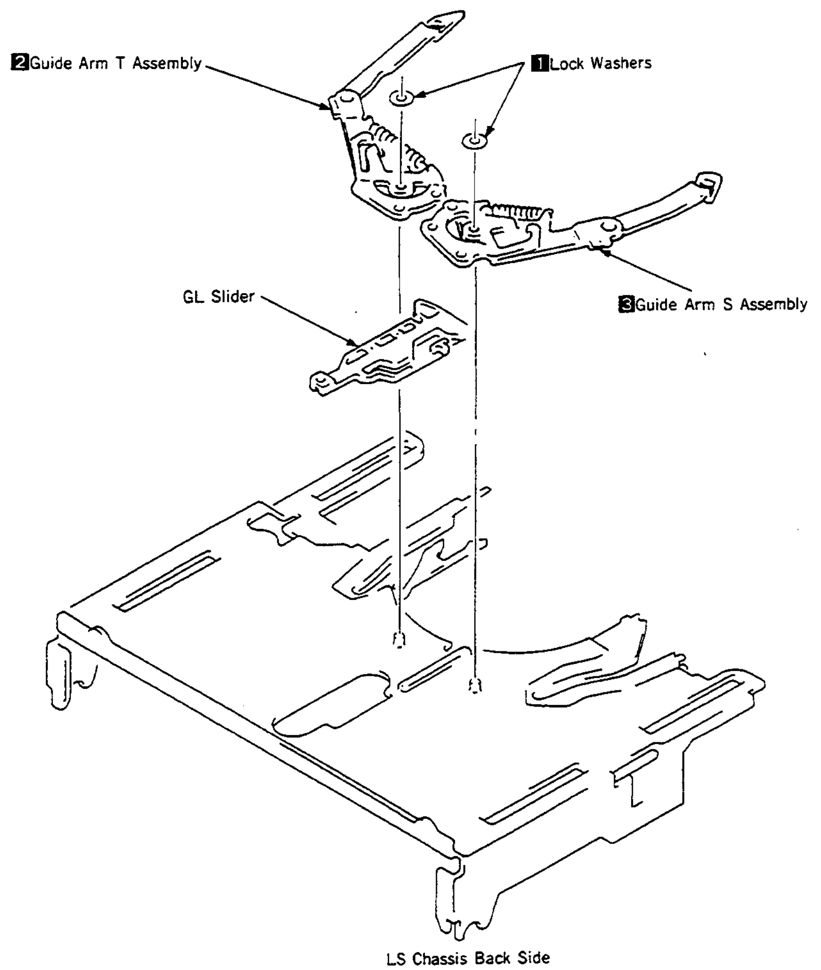


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow 🅐 direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake ❼ toward the arrow 🅑, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow 🅐 (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow 🅒 and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

Note : Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

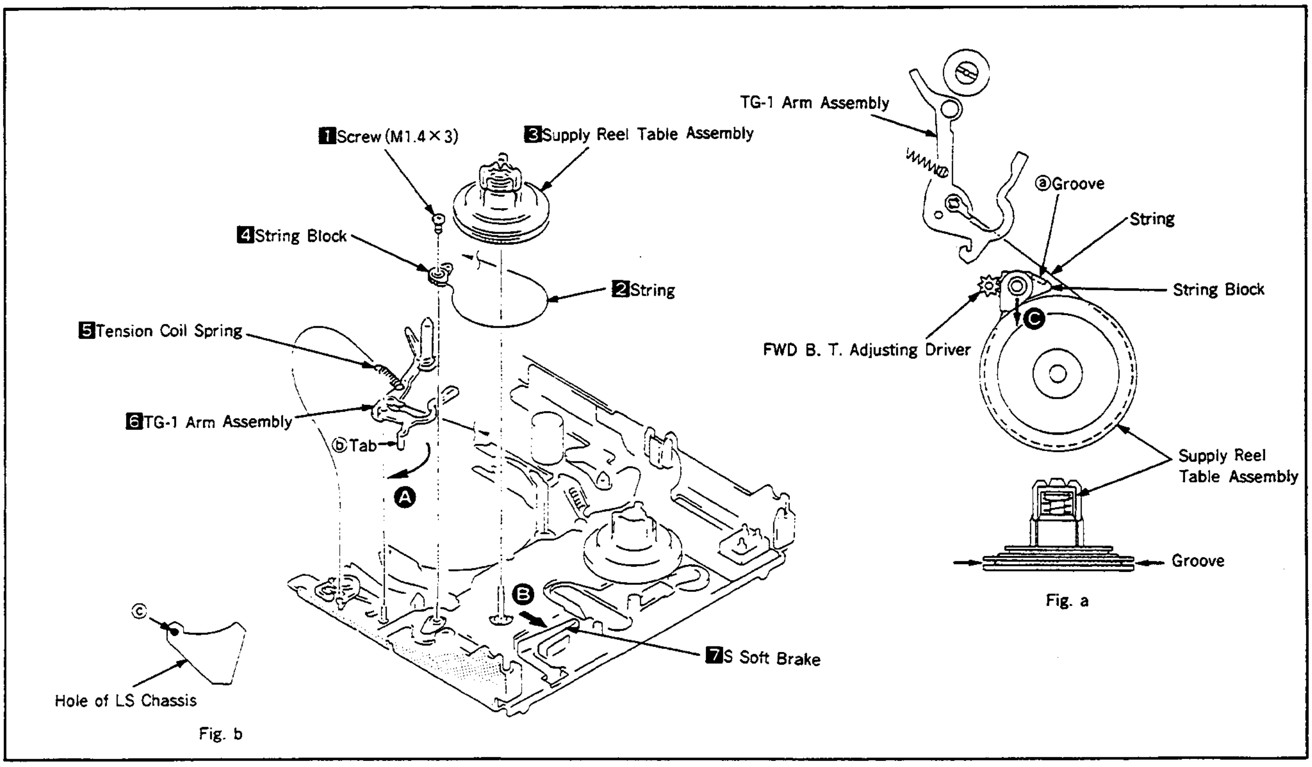

❶Screw (M1.4×3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
🅐
🅑
❼S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐGroove
String
String Block
🅒
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

3. TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly ❶ .
2) Remove a compression coil spring ❷ .

2. Mounting

1) Insert a compression coil spring ❷ into the boss on chassis.
2) Rotate gently the TG-2 roller assembly ❶ until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

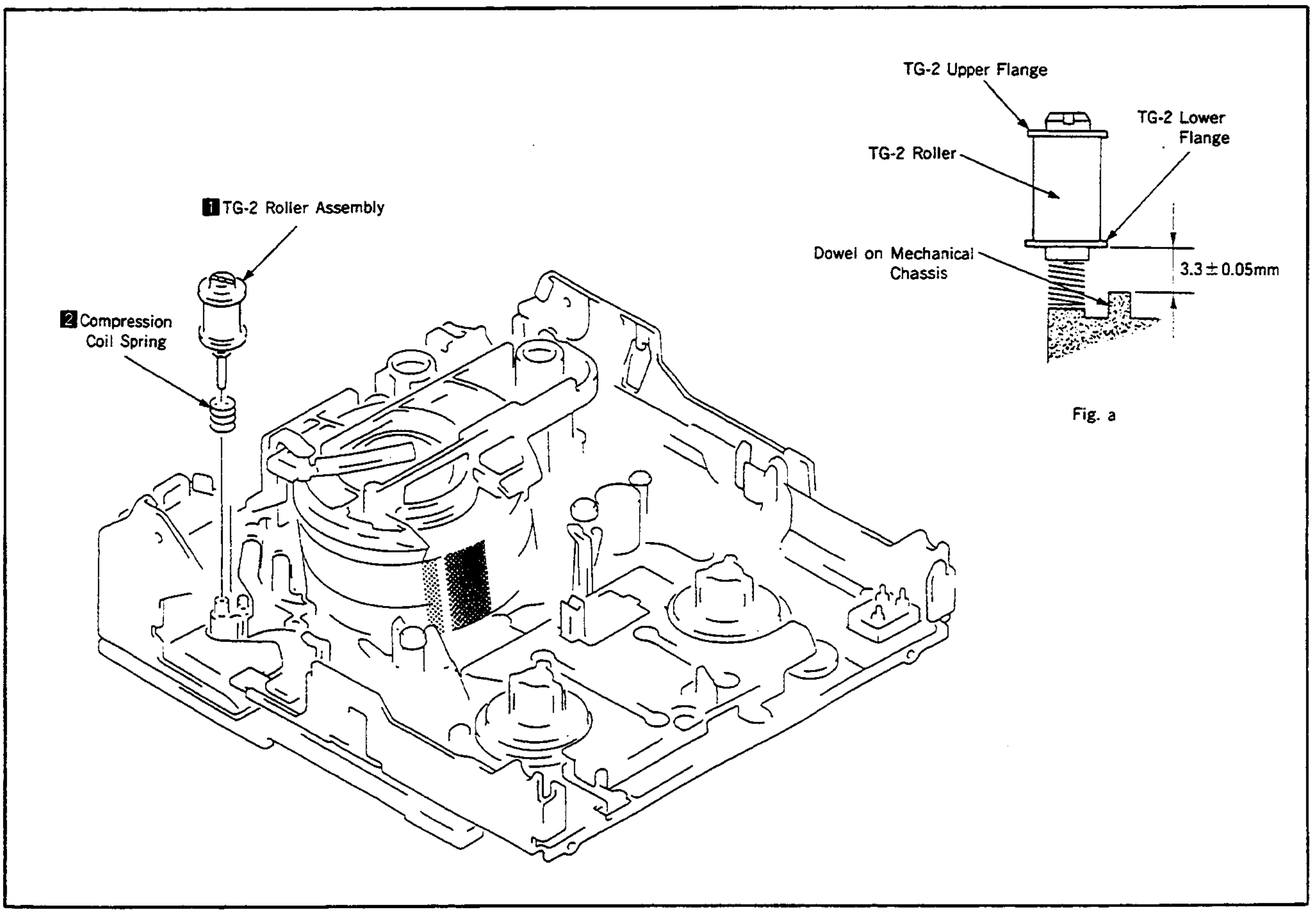

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
❶ TG-2 Roller Assembly
❷ Compression Coil Spring

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchassis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

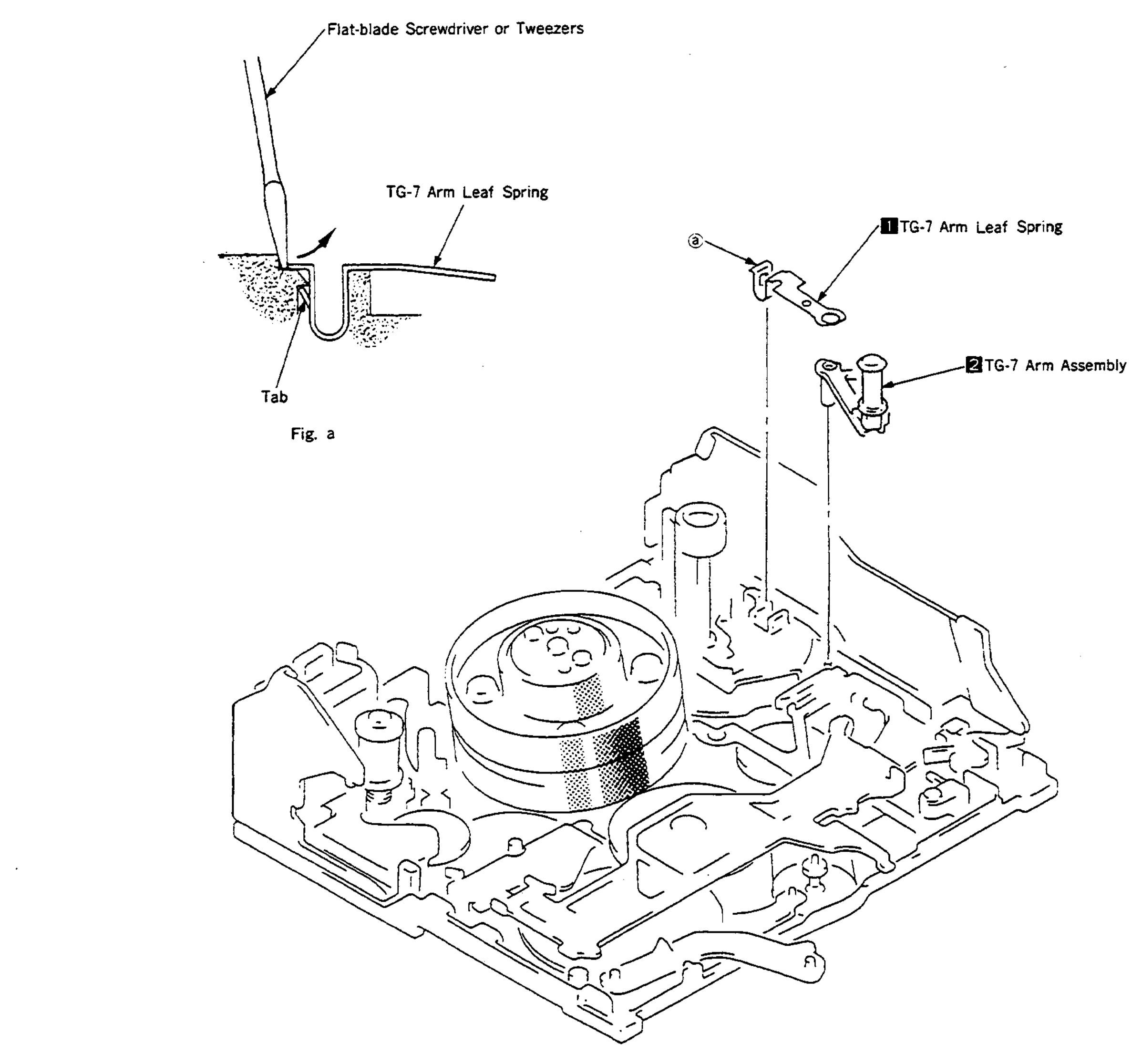


Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

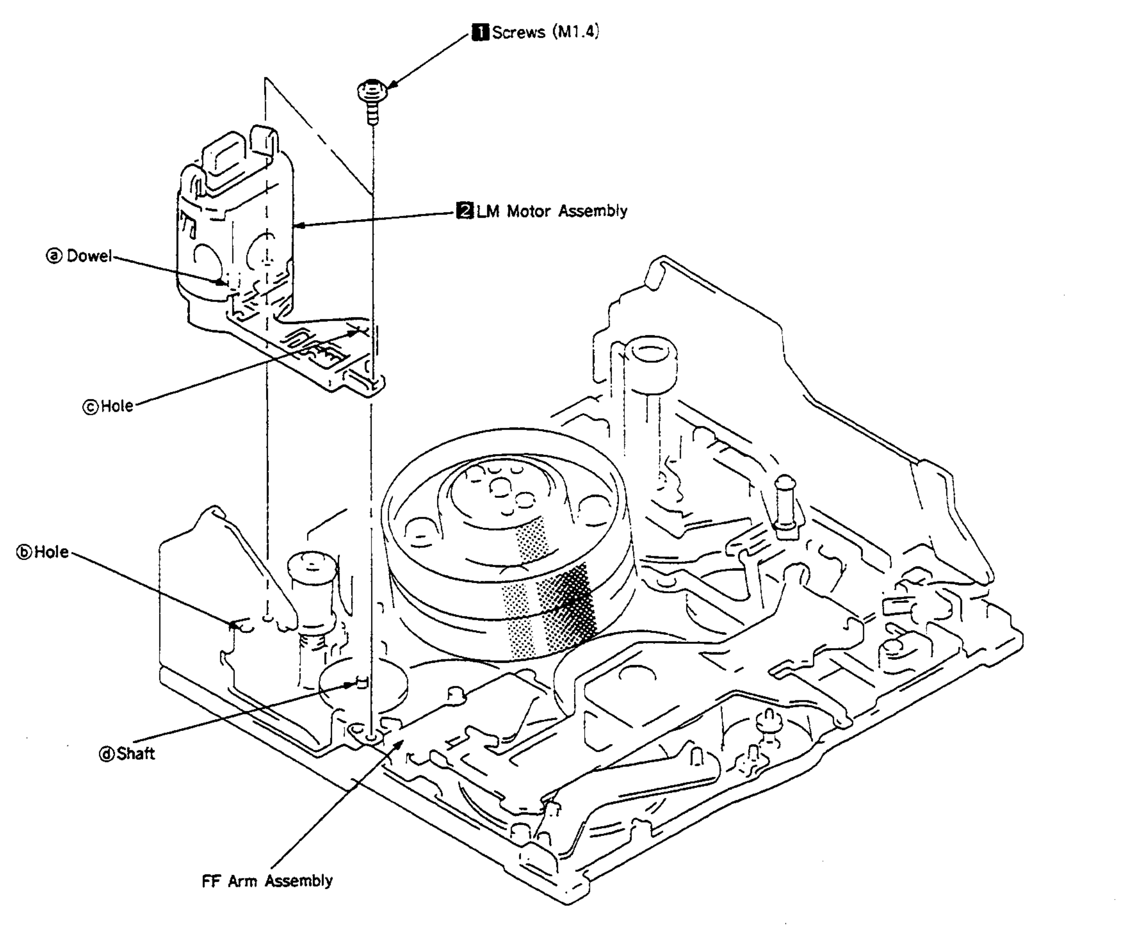


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

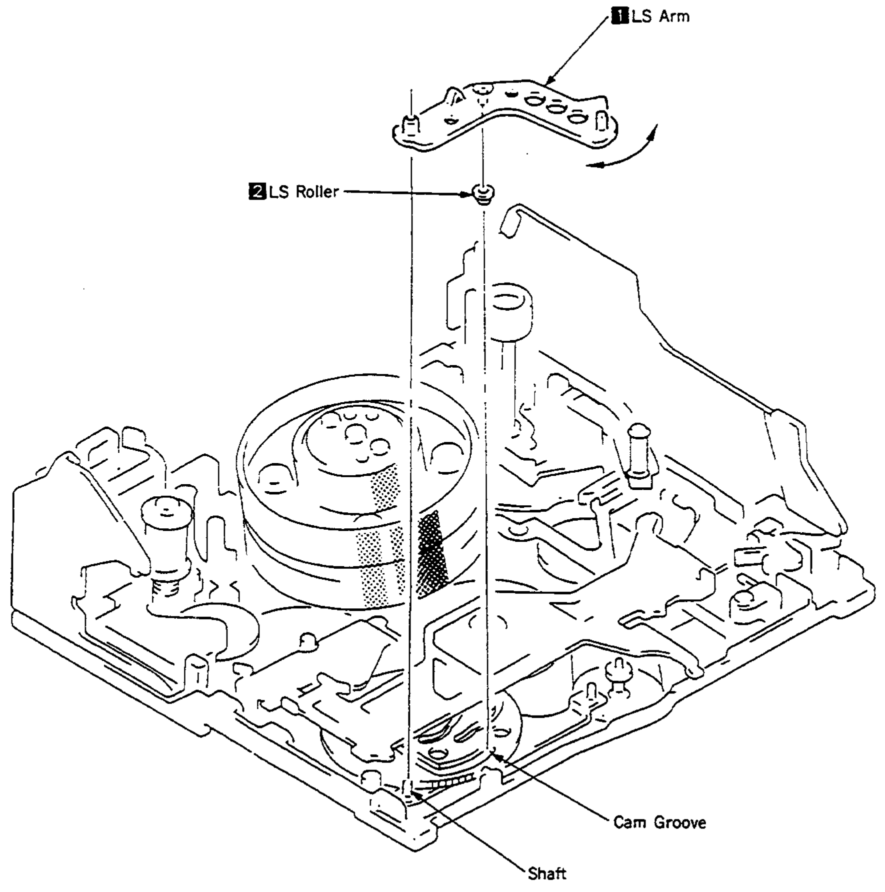


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

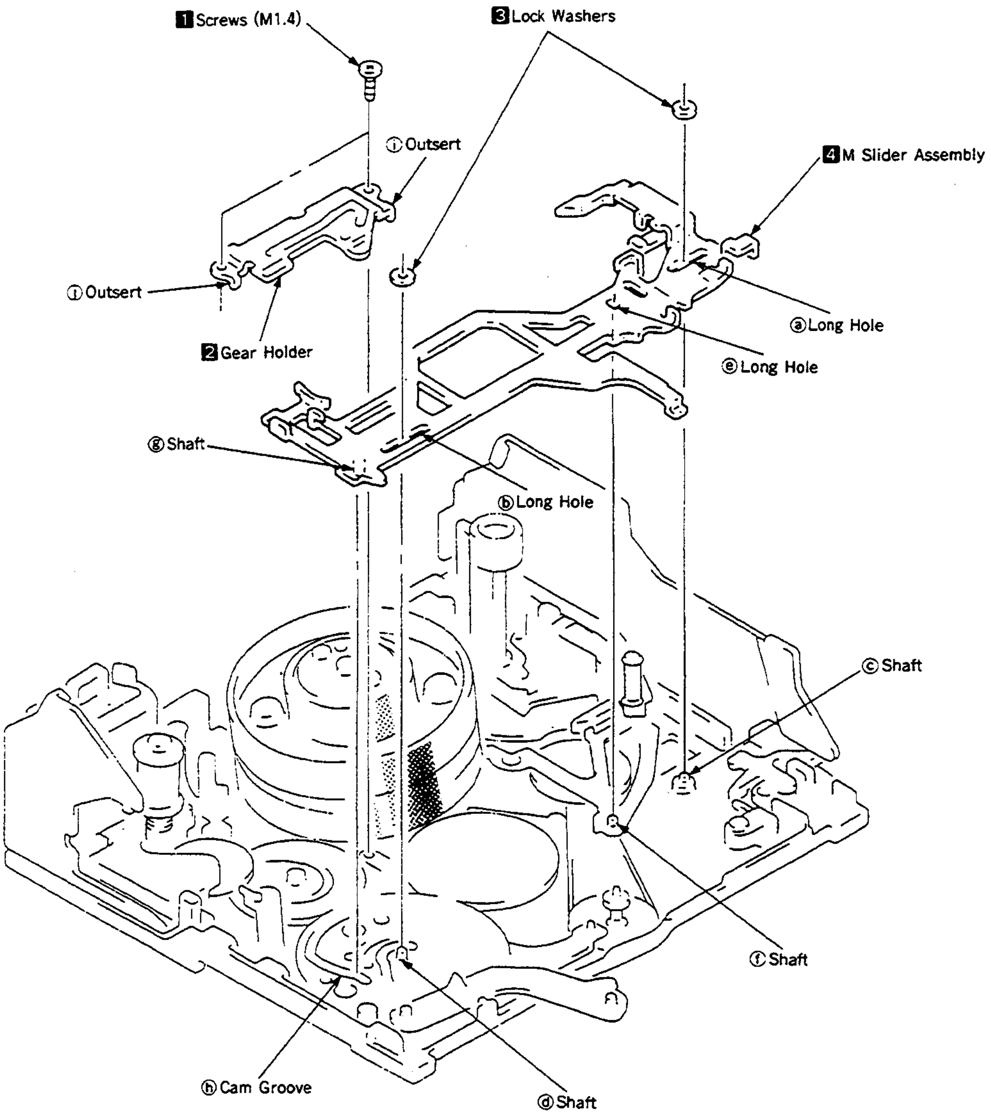

❶Screws (M1.4)
❸Lock Washers
ⓘ Outsert
❹M Slider Assembly
ⓙ Outsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

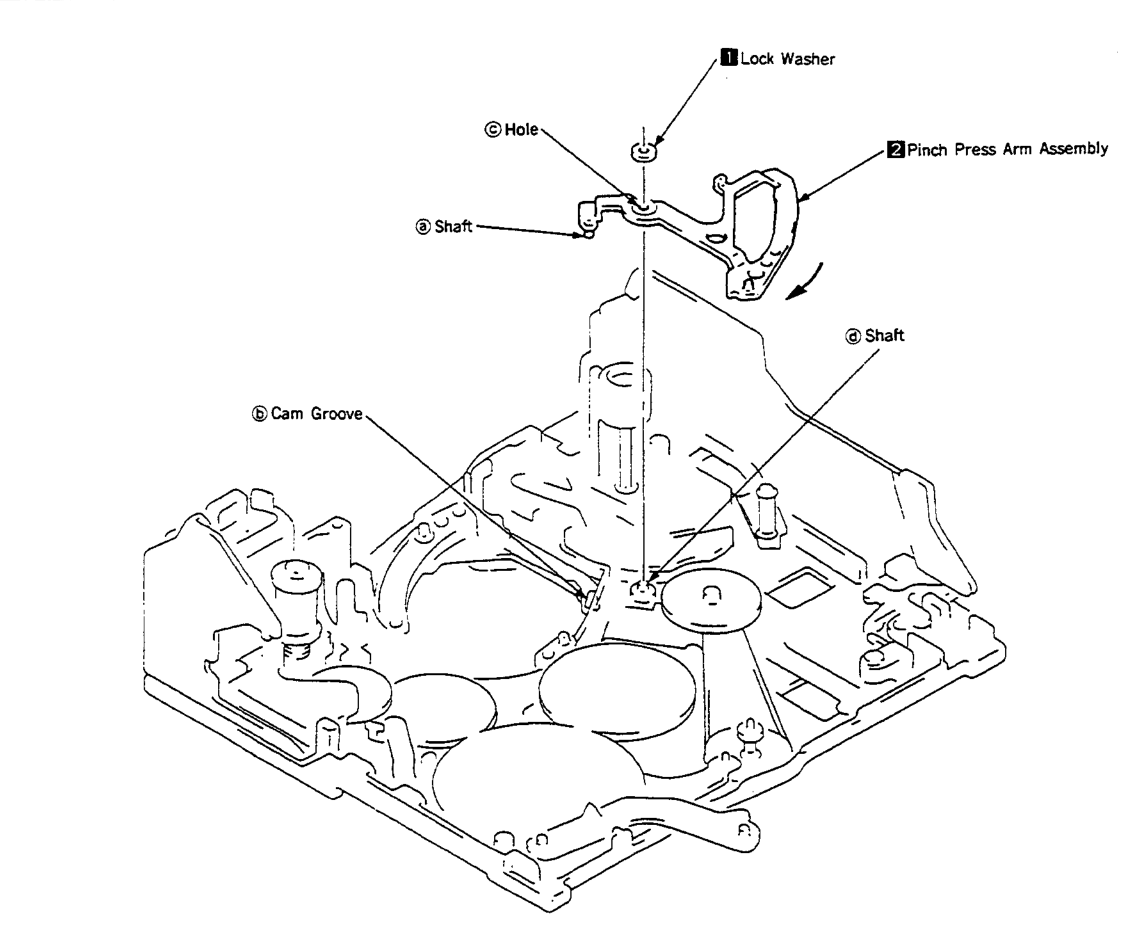


Fig. 24

. CAM (Fig. 25)

Removal

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

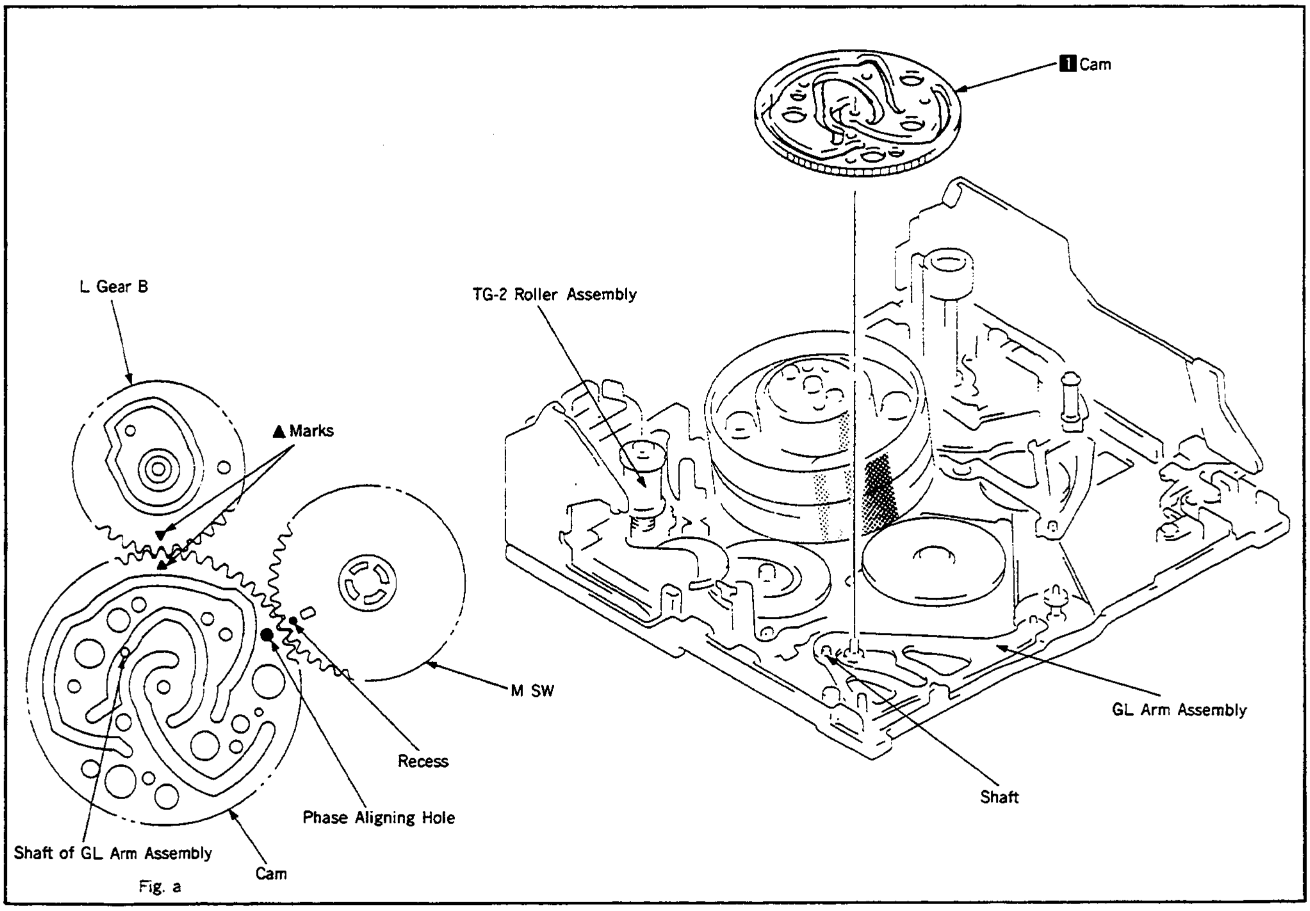


Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly 1.

2. Mounting

1) Mount the GL arm assembly 1 with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

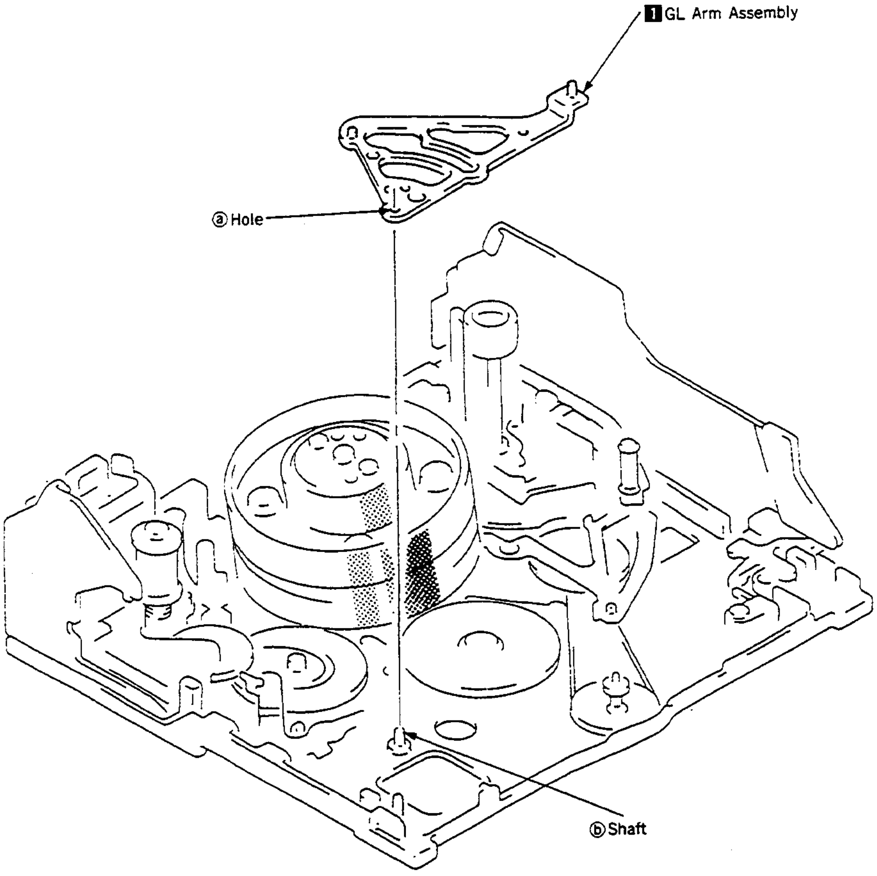


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly 1.
10) Remove the L gear A 2.
11) Remove the L gear B 3.

2. Mounting

1) Insert the L gear B 3 into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A 2 into the shaft of mechanical chassis.
3) Mount the FF arm assembly 1 with its two shafts inserted into the cam groove of L gear B 3 and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

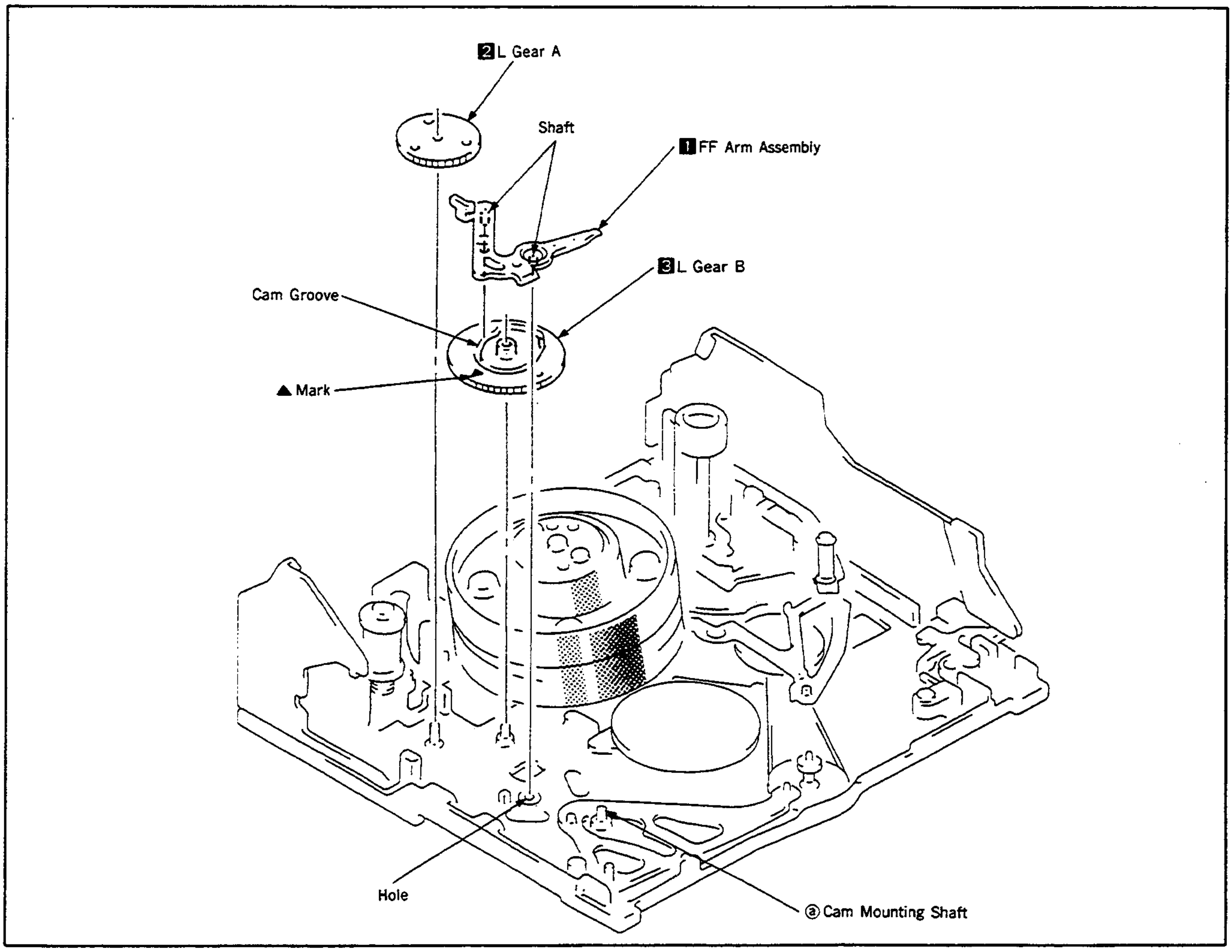


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

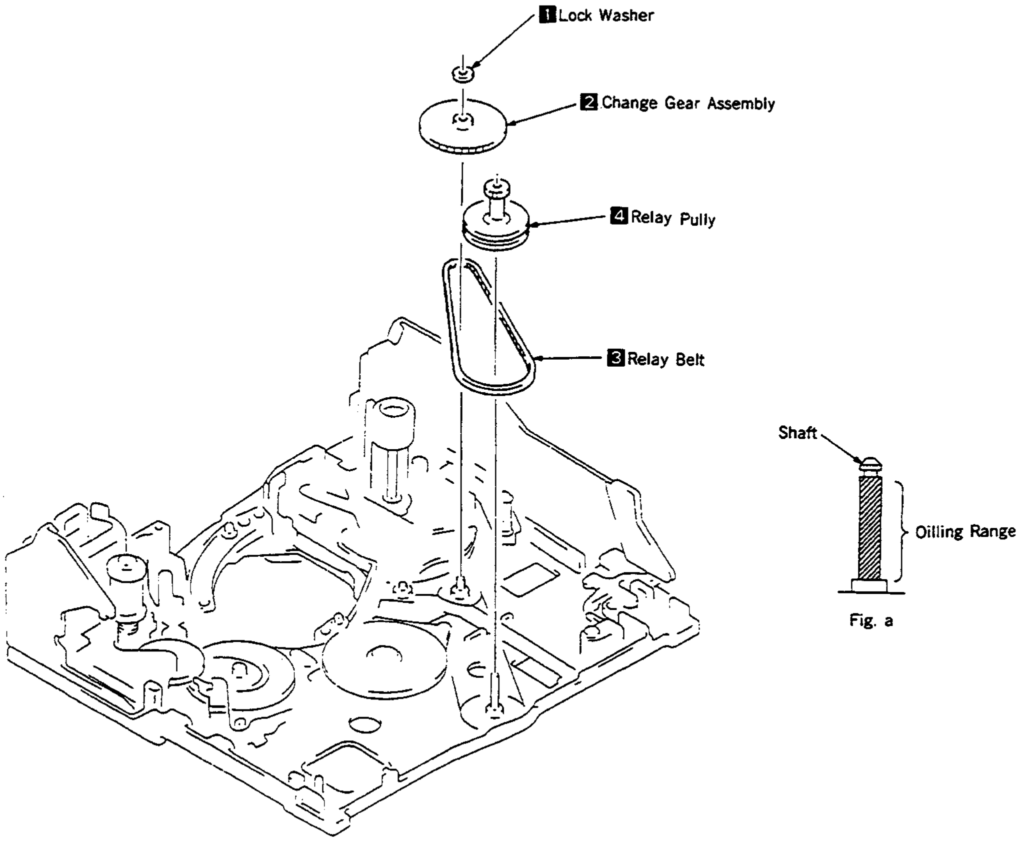


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

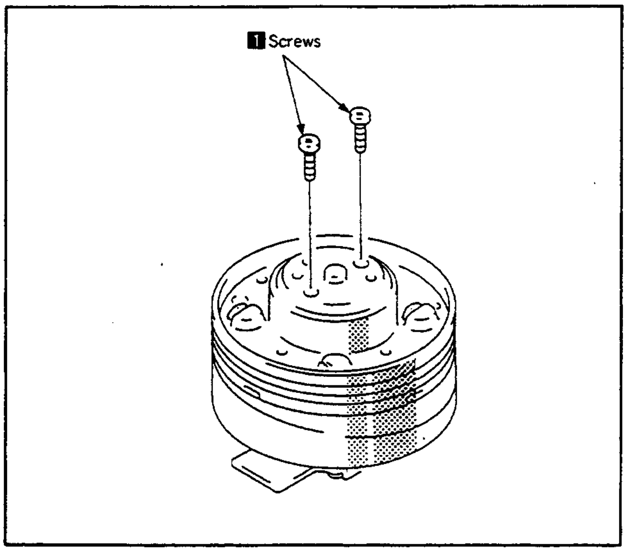


Fig. 29

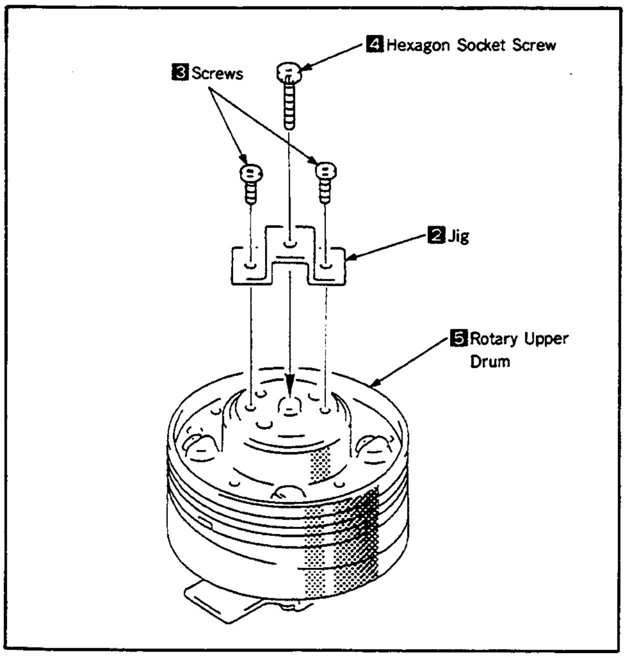


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

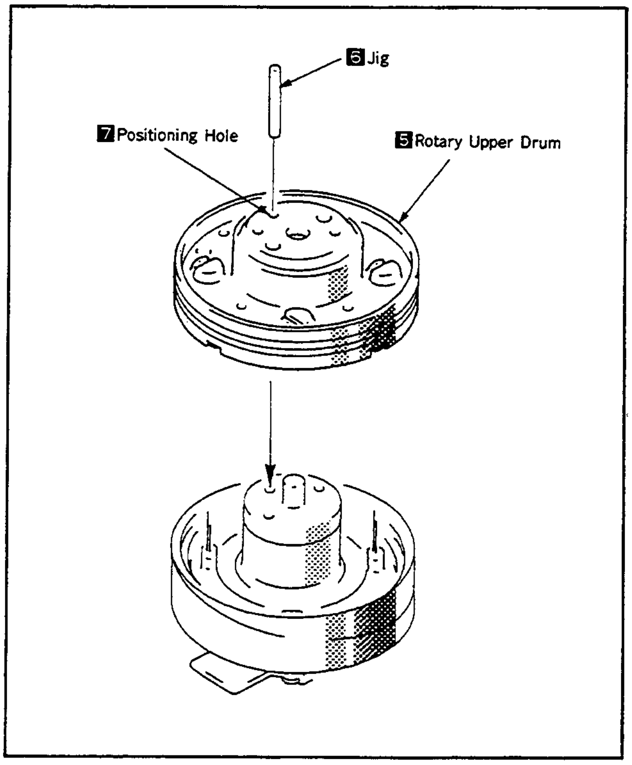


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

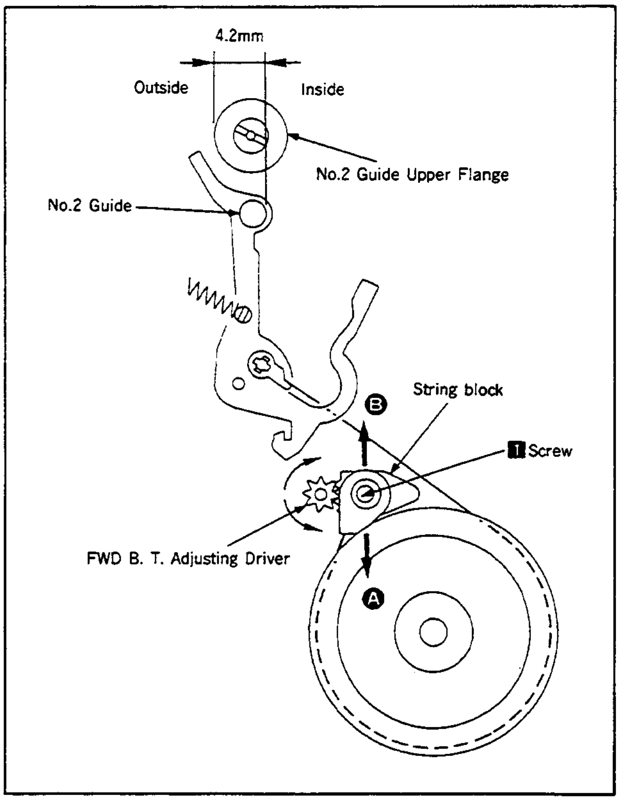

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

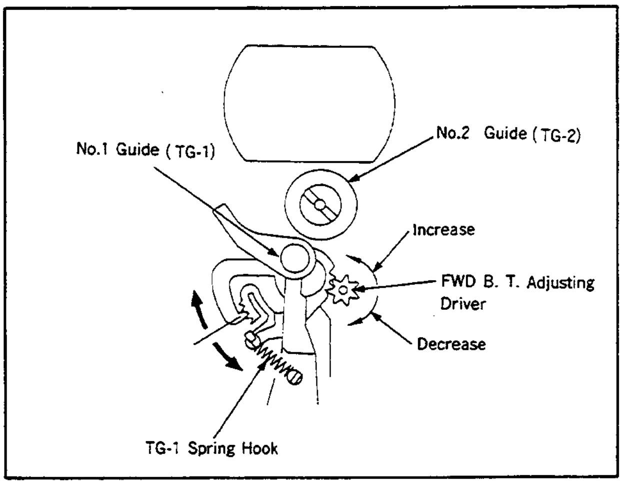

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series

Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode

If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

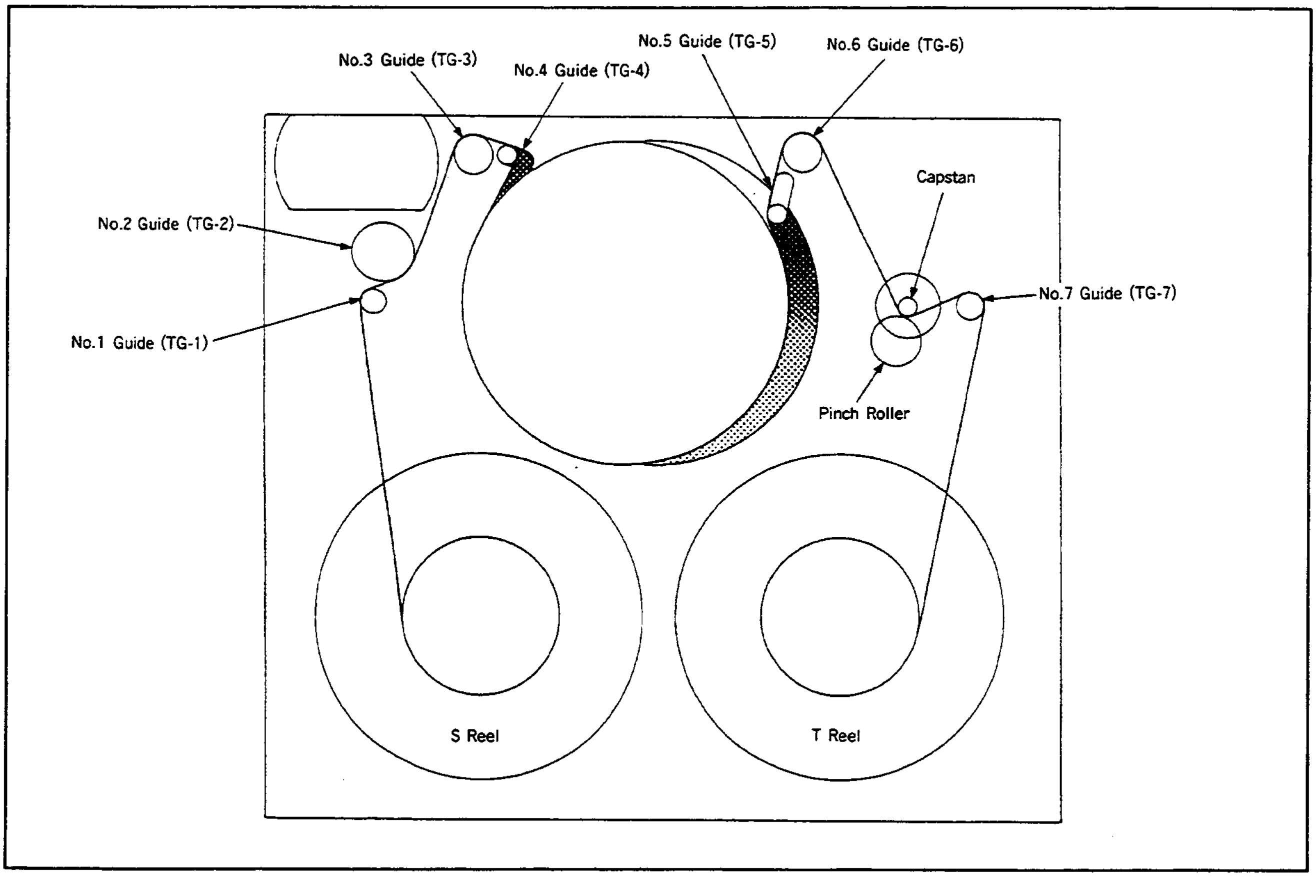


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

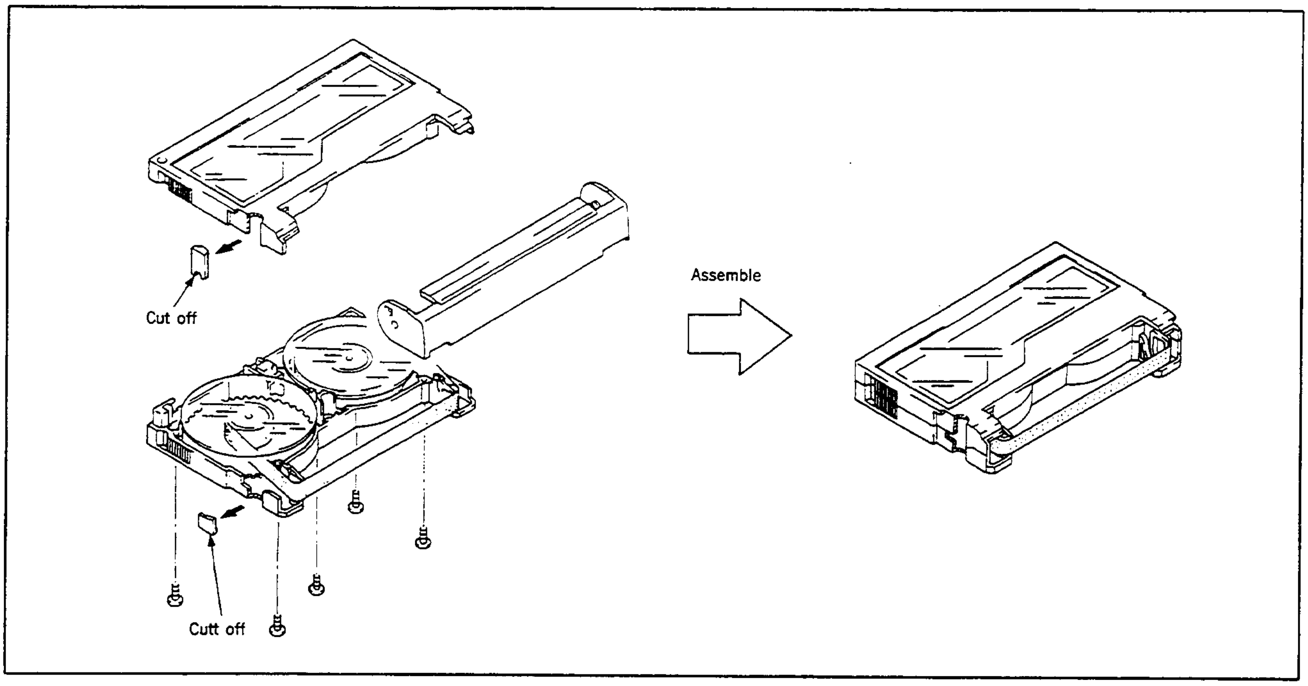


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
      CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
      CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

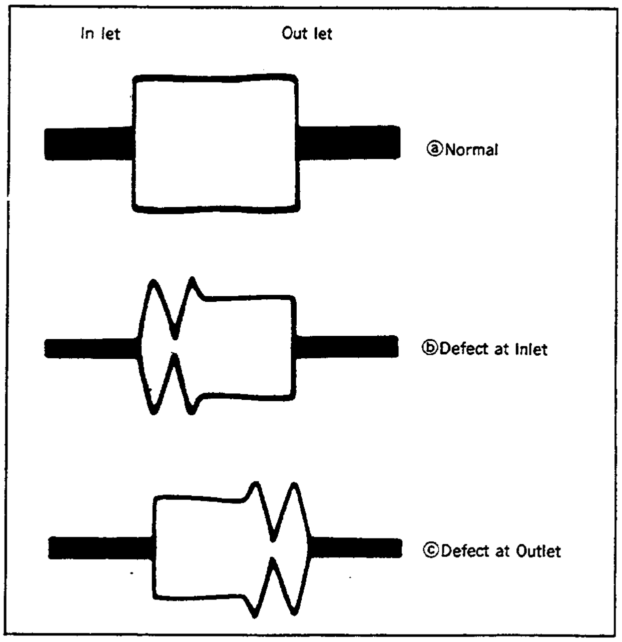


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

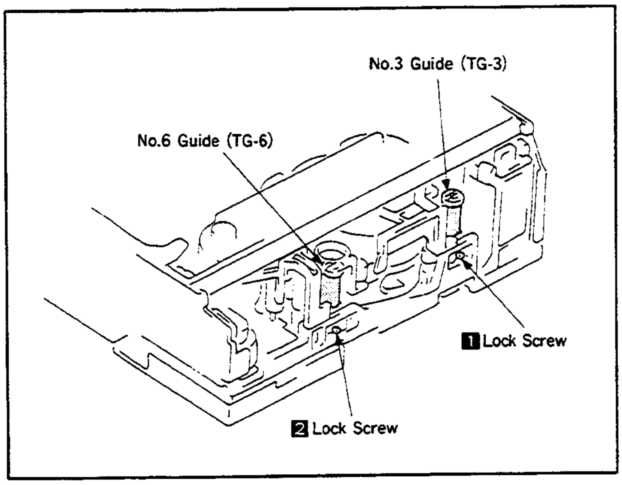


Fig. 36

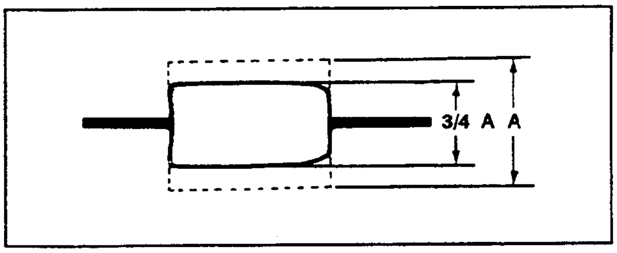


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

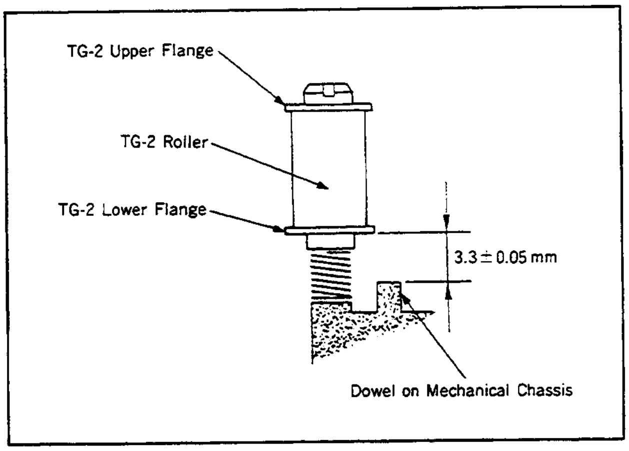


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange 2 of the No.2 guide (TG-2) 1 (Fig. 39). If it is, turn the upper flange 3 of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange 3 of the No. 2 guide (TG-2) 1 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

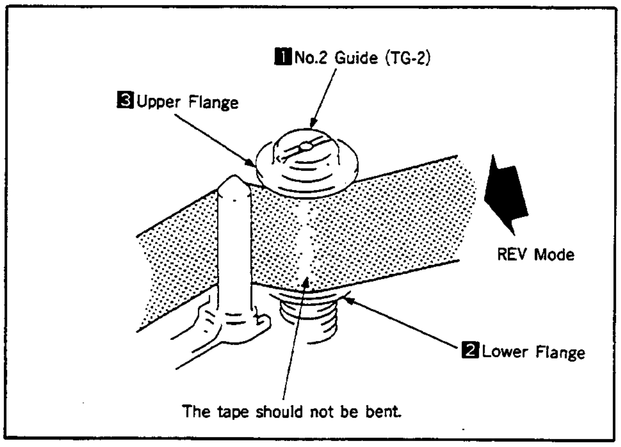


Fig. 39

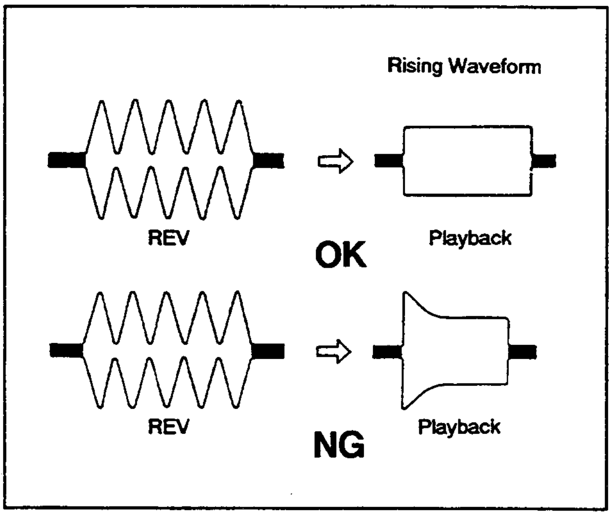


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) 1 and the capstan 2. If it is, turn the hight adjusting screw 4 of the No.7 guide (TG-7) 3 until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan 2 and the hight adjusting screw 4 of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) 3 until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) 1 and the capstan 2 is 0.3mm or less, adjustment can be considered completed.

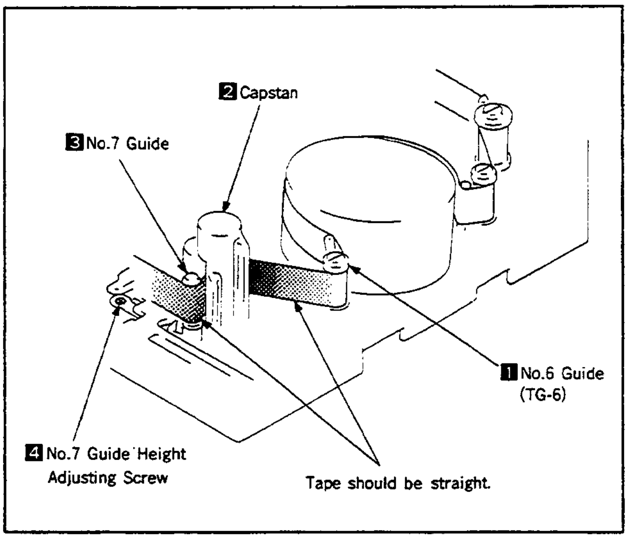


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

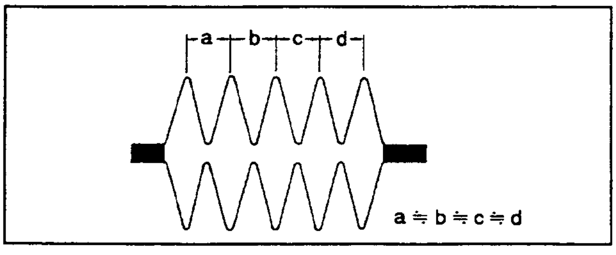


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

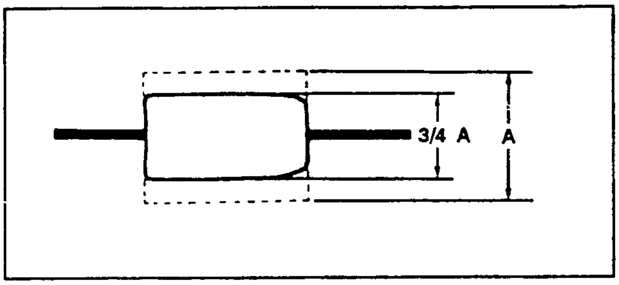


Fig. 43

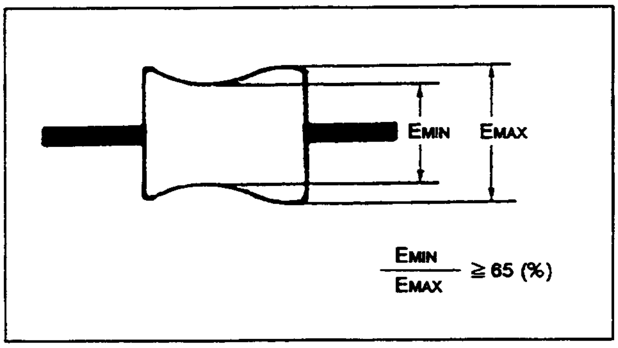

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

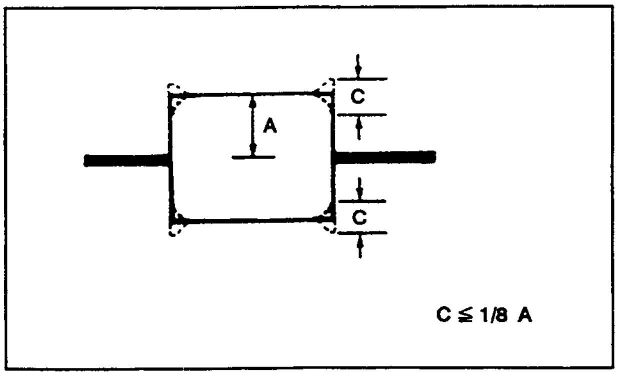


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

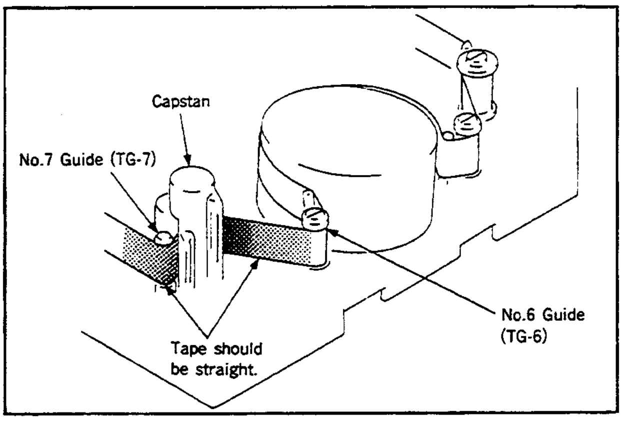

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

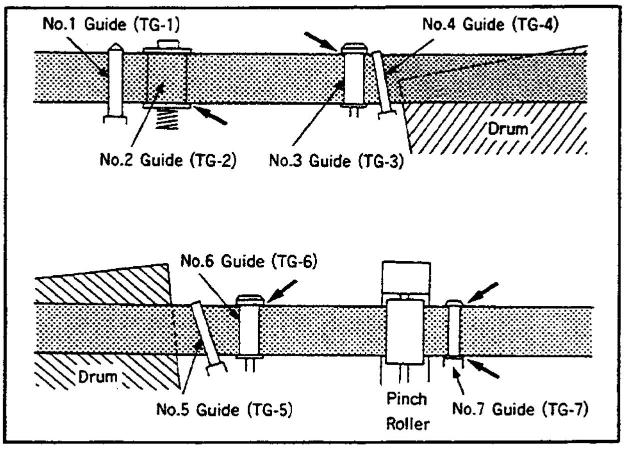

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

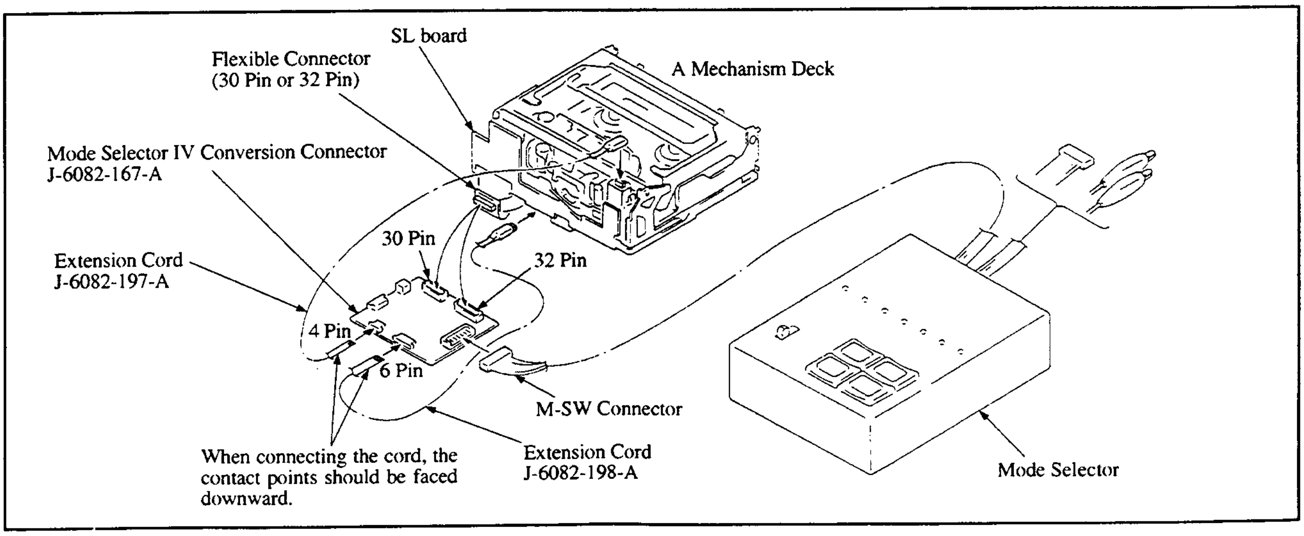
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
32 Pin
Extension Cord
J-6082-197-A
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord
J-6082-198-A
Mode Selector

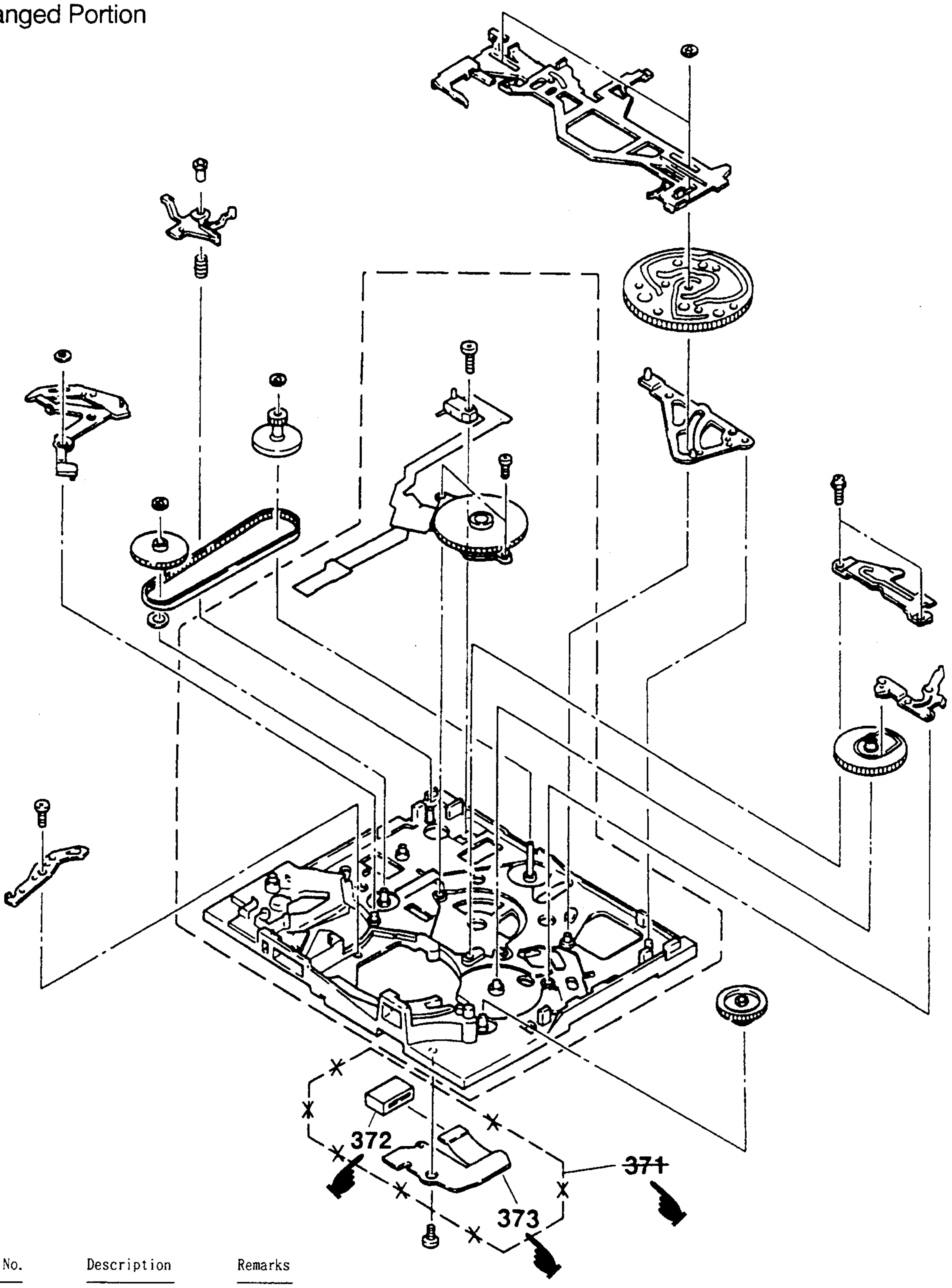
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➡	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~ ☛	
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD ☛	

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